INSTALLATION RESTORATION PROGRAM

SITE INVESTIGATION REPORT
APPENDICIES A through J

FINAL

151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

NOVEMBER 1997

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Restoration and Waste Management Programs
Oak Ridge, Tennessee 37831-7606
managed by MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-84OR21400

FINAL

INSTALLATION RESTORATION PROGRAM

SITE INVESTIGATION REPORT

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151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Submitted to:

AIR NATIONAL GUARD READINESS CENTER
ANDREWS AIR FORCE BASE

Submitted by:

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
MARTIN MARIETTA ENERGY SYSTEMS, INC.
Oak Ridge, Tennessee 37831

for the:

U.S. DEPARTMENT OF ENERGY

Prepared by:

PARSONS ENGINEERING SCIENCE, INC.
SALT LAKE CITY, UTAH 84040

NOVEMBER 1997

VOLUME II

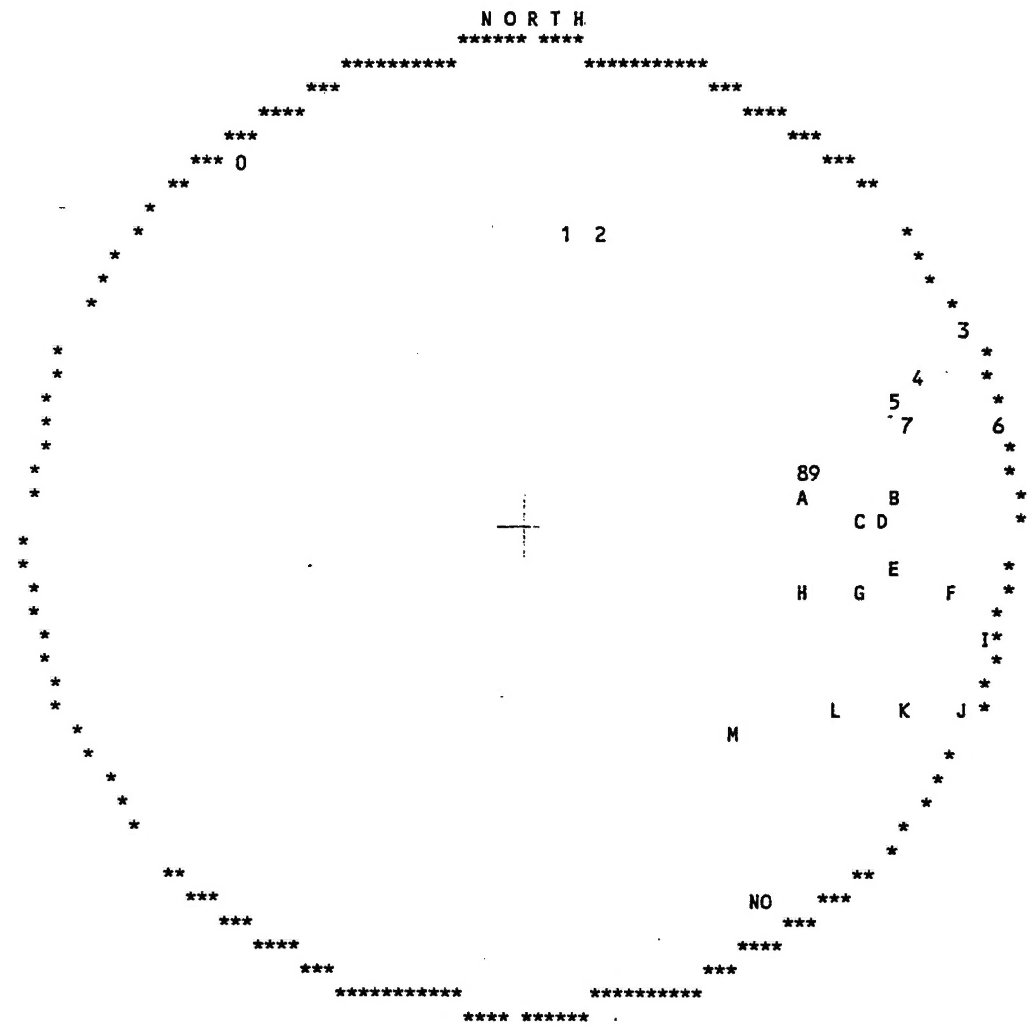
LIST OF APPENDICES

APPENDIX A
WATER RIGHTS SEARCH

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED WED, APR 28, 1993, 2:17 PM
PLOT SHOWS LOCATION OF 32 POINTS OF DIVERSION

PLOT OF AN AREA WITH A RADIUS OF 5280 FEET FROM A POINT
N 1990 FEET, W 2200 FEET OF THE SE CORNER,
SECTION 28 TOWNSHIP 1N RANGE 1W SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 2000 FEET



MAP CHAR	WATER RIGHT	CFS	QUANTITY AND/OR	AC-FT	DIAMETER	DEPTH	YEAR	LOG	NORTH	EAST	CNR	SEC	TWN	RNG	B&M	UNN	APP	PER	TER	SUR	UGW	PWP	RED
0	59 163	.0150		.00	3	654	1940	Y	N 735	E 140	SW	21	1N	1W	SL			X			X		
		WATER USE(S): IRRIGATION DOMESTIC									PRIORITY DATE: 08/24/1940												
		Salt Lake City Corp.				City and County Building					Salt Lake City UT												
1	59 3650	.0150		.00	2	300		N	N 25	E 900	S4	21	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING									PRIORITY DATE: / /1891												
		Gillmor, Charles F.				136 South 7th East					Salt Lake City UT 84107												
1	59 3564	.0150		.00	2	300		N	N 25	E 900	S4	21	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING									PRIORITY DATE: / /1891												
		Gillmor, Edward Leslie				3819 South 20th East					Salt Lake City UT												
1	59 2715	.0220		.00	2	300	1891	N	N 25	E 900	S4	21	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING									PRIORITY DATE: / /1891												
		Gillmor, Edward L.				962 South 5th East					Salt Lake City UT 84105												
2	59 3561	.0330		.00				N	N 15	E 1260	S4	21	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING									PRIORITY DATE: / /1891												
		Gillmor, Edward Leslie				3819 South 20th East					Salt Lake City UT												
2	59 3563	.0220		.00				N	N 15	E 1260	S4	21	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING									PRIORITY DATE: / /1891												
		Gillmor, Edward L.				962 South 5th East					Salt Lake City UT												
2	59 3562	.0220		.00				N	N 15	E 1260	S4	21	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING									PRIORITY DATE: / /1891												
		Gillmor, Charles F.				136 South 7th East					Salt Lake City UT												
3	59 2579	.0110		.00	2	168	1916	N	S 1140	W 185	N4	27	1N	1W	SL			X			X		
		WATER USE(S): IRRIGATION DOMESTIC									PRIORITY DATE: 00/00/1916												
		Ponderosa One Limited Partnership (c/o J				4110 North Scottsdale Road, Suite 320					Scottsdale AZ 85251												
4	59 5386	.1000		.00	48	10 - 25			S 1700	E 2000	NW	27	1N	1W	SL	X					X		
		WATER USE(S): IRRIGATION									PRIORITY DATE: 03/03/1993												
		Molyneux, Carolyn				1133 North Satori Circle					Salt Lake City UT 84116												
5	59 691	.0067		.00	2	400	1949	Y	S 1780	W 875	N4	27	1N	1W	SL			X			X		
		WATER USE(S): STOCKWATERING OTHER									PRIORITY DATE: 11/09/1948												
		Elkins, Norman A. & Ada L.				1595 West 4th North					Salt Lake City UT 84116												
5	59 1396	.0150		.00	2	100 - 300		N	N 756	E 1765	W4	27	1N	1W	SL			X			X		
		WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING									PRIORITY DATE: 10/09/1958												
		Omni Enterprises				351 South State					Salt Lake City UT												
6	59 4467	.0150		.00	4	475			S 2066	E 144	N4	27	1N	1W	SL			X			X		
		WATER USE(S): DOMESTIC									PRIORITY DATE: 05/02/1977												
		Berg, D. Gordon				Box 10					Modena, UT 84753												
7	59 2751	.0090		.00	2	197	1900	Y	N 430	E 1910	W4	27	1N	1W	SL			X			X		
		WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING									PRIORITY DATE: / /1900												
		Closson, Clarence E. and Eleanor M.				1099 North 1800 West					Salt Lake City UT 84116												
8	59 4906	.1181		.00	2	275			N 10	E 770	W4	27	1N	1W	SL			X			X		
		WATER USE(S): IRRIGATION									PRIORITY DATE: 08/20/1982												
		Nelson, Kent K.				1004 Morton drive					Salt Lake City UT 84116												
9	59 4906	.1181		.00	2	460			S 50	E 900	W4	27	1N	1W	SL			X			X		
		WATER USE(S): IRRIGATION									PRIORITY DATE: 08/20/1982												
		Nelson, Kent K.				1004 Morton drive					Salt Lake City UT 84116												
A	59 316	.0150		.00	2	225	1942	Y	S 200	E 730	W4	27	1N	1W	SL			X			X		
		WATER USE(S): DOMESTIC STOCKWATERING									PRIORITY DATE: 06/09/1942												
		Holbrook, Keith				1896 West 8th North					Salt Lake City UT												

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	CFS	QUANTITY AND/OR	AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR	LOG	POINT OF DIVERSION DESCRIPTION NORTH	EAST	CNR	SEC	TWN	RNG	B&M	UNN	APP	PER	TER	SUR	UGW	PTP	RED	WATER USE(S)	OWNER	ADDRESS	PRIORITY DATE	CITY
B	59 1395	.0150		.00	2	228	1979	Y	S 320	E 1805	W4	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC	Munsee, Alvin L. & Donna V.	957 North 1850 West	10/09/1958	Salt Lake City UT
C	59 3432	.0150		.00	2	275	1890	N	S 560	E 1430	W4	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC STOCKWATERING	Malliet, Ervin F.	1868 West Eighth North	00/00/1890	Salt Lake City UT 84116
D	59 3433	.0150		.00	2	275	1890	N	S 560	E 1590	W4	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC STOCKWATERING	Smith, Hugh A. & Josephine A.	1866 West Eighth North	00/00/1890	Salt Lake City UT 84116
E	59 1220	.0330		.00	2	249	1955	Y	N 1630	E 1737	SW	27	1N	1W	SL			X			X			IRRIGATION	Woodland, Keith	1795 West 8th North	06/23/1955	Salt Lake City UT
F	59 2372	.0130		.00	2	180	1910	N	N 1470	E 2390	SW	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC STOCKWATERING	Maddox, Neal D.	855 North Redwood Road	00/00/1910	Salt Lake City UT 84116
G	59 2722	.0220		.00	2	200	1896	N	N 1340	E 1345	SW	27	1N	1W	SL			X			X			STOCKWATERING	Omni Enterprises (C/O Roland R. Wright)	351 South State	/ /1896	Salt Lake City UT 84111
H	59 2145	.0450		.00	4	200	1904	N	N 1280	E 735	SW	27	1N	1W	SL			X			X			STOCKWATERING	Omni Enterprises	351 South State	/ /1904	Salt Lake City UT 84111
I	59 3686	.0110		.00				N	N 900	E 55	S4	27	1N	1W	SL			X			X			IRRIGATION	Shimizu, Ted	780 North Redwood Road	/ /1935	Salt Lake City UT
I	59 2539	.0160		.00	2	234	1927	N	N 750	E 70	S4	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC STOCKWATERING	Callister, Mae	766 North Redwood Road	09/00/1927	Salt Lake City UT 84116
J	59 2898	.0110		.00	2	150	1920	N	N 167	W 131	S4	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC	Omni Enterprises (c/o Roland R. Wright)	351 South State	/ /1920	Salt Lake City UT 84111
K	59 1355	.0150		.00	2	231	1958	Y	N 150	W 825	S4	27	1N	1W	SL			X			X			IRRIGATION DOMESTIC	Christensen, Eugene R.	1795 West 6th North	01/29/1958	Salt Lake City UT
L	59 3112	.0220		.00	2	260	1922	N	N 50	E 1120	SW	27	1N	1W	SL			X			X			STOCKWATERING	Omni Enterprises	351 South State	/ /1922	Salt Lake City UT
M	59 3111	.0180		.00	2	420	1923	N	S 265	E 30	NW	34	1N	1W	SL			X			X			STOCKWATERING	Omni Enterprises	351 South State	/ /1923	Salt Lake City UT
N	59 1346	.0150		.00	2	126	1957	Y	N 655	E 295	W4	34	1N	1W	SL			X			X			IRRIGATION DOMESTIC	Galarza, Louise c/o Marcus Urrachaga	1187 American Beauty Drive	09/25/1957	Salt Lake City UT
O	59 494	.0150		.00	2	350	1946	Y	N 620	E 360	W4	34	1N	1W	SL			X			X			IRRIGATION DOMESTIC	Glarza, Louise (C/O Marcus Urrechaga)	1187 American Beauty Drive	03/22/1946	Salt Lake City UT
O	59 1337	.0150		.00	2	183	1957	Y	N 614	E 385	W4	34	1N	1W	SL			X			X			IRRIGATION DOMESTIC	Urrechaga, Juanita M.	1960 West 3 North	08/07/1957	Salt Lake City UT

-30-50
-mv--1-16-50
vgh-1-30-50
1-23-50
(-)27bdb-1

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Report No. 7448
Filed Dec. 27 1949
Rec. By MV
Ret'd

Report of Well and Tunnel Driller

STATE OF UTAH

(Separate report shall be filed for each well or tunnel)

GENERAL INFORMATION:

Report of well or tunnel driller is hereby made and filed with the State Engineer, in compliance with Sec. 100-3-22, Utah Code Annotated, 1943. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of well or tunnel. Failure to file such report constitutes a misdemeanor.)

1. Name and address of person, ~~company, corporation, boring~~ drilling well ~~or tunnel~~ (Strike words not needed)

   J. E. Kilpack 63 East 2700 South, Salt Lake City, Utah

2. Name and address of owner of well ~~or tunnel~~ (Strike Words not needed) Adelbert Elkins,

   1740 West 17th North, S.L.City

3. Source of supply is in Salt Lake County;

   .... (Leave blank) drainage area; .... (Leave blank) artesian basin

4. The number of approved application to appropriate water is 20327

5. Location of well ~~or mouth of tunnel~~ is situated at a point

   S. 1715 ft. & W. 710 ft. from N¼ Cor. Sec.27,T1N,R1W, SLM.

   (Describe by rectangular co-ordinates or by one course and distance with reference to U. S. Government Survey Corner — Copy description from well owner's approved application)

6. Date on which work on well ~~or tunnel~~ was begun (Strike words not needed) July 20,1949

7. Date on which work on well ~~or tunnel~~ was completed ~~or abandoned~~ (Strike words not needed) August 1,1949

8. Maximum quantity of water measured as flowing, ~~or pumped~~ (Strike words not needed) .... on completion of well ~~or tunnel in sec. ft.~~ ....; or in gals. per minute 10 Date Aug. 1,1949

DETAIL OF COLLECTING WORKS:

9. WELL: It is drilled, ~~dug~~, flowing ~~or pump~~ well. (Strike words not needed) Temperature of water ....°F.

   (a) Total depth of well is 400 ft. below ground surface.

   (b) If flowing well, give water pressure (hydrostatic head) above ground surface 6 ft.

   (c) If pump well, give depth from ground surface to water surface before pumping ....; during pumping ....

   (d) Size and kind of casing 2" new Black pipe (If only partially cased, give details)

   (e) Depth to water-bearing stratum 385 ft. (If more than one stratum, give depth to each)

   (f) If casing is perforated, give depth from ground surface to perforations 380 ft.

   (g) Log of well 0 to 12 clay; 12 to 30 sand; 30 to 159 clay; 150 to 169 sand; ~~169 to 175 clay; 175 to 259 clay streeks sand; 259 to 277~~ hard sand; 277 to 295 clay; 295 to 297 hard pan; 297 to 345 clay; 345 to 382 hard pan; 382 to 386 clay; 386 to 400 sand;

   (h) Well was equipped with cap, valve, or (Strike words not needed) valve to control flow.

(Over)

PHOTOSTATED
[redacted] 3-4-57 68
Exam. & Recorded 12-24-58 ACT
Exam. for filing 12-22-58 ACT
Final Copy checked
Indexed 1-21-59
Well No. (B-1-1) 27 cab.

PAGE.................. (Leave Blank)

Report No. 13731
Filed 19
Rec. By 12-23-58
Ret'd

Report of Well and Tunnel Driller

STATE OF UTAH

Jobbed
Orig Ap. OK.

(Separate report shall be filed for each well or tunnel)

GENERAL INFORMATION: Mar. 16, 57

Report of well or tunnel driller is hereby made and filed with the State Engineer, in accordance with the laws of Utah. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of well or tunnel. Failure to file such reports constitutes a misdemeanor.)

1. Name and address of person, company or corporation boring or drilling well or tunnel. (Strike words not needed)
   V. J. Harkness 2756 So. 3 ... S.L.C.
2. Name and address of owner of well or tunnel (Strike words not needed)
   Madison D. Pilcher 451 north 1850 West S.L.C. 1100
3. Source of supply is in.................. County;
   .... (Leave blank) drainage area; .... (Leave blank) artesian basin
4. The number of approved application to appropriate water is 30283
5. Location of well or mouth of tunnel is situated at a point E. 1808.55 ft. & South 307.5 ft. from the W 1/4 Cor. Sec. 27, T.1 N. R.1 W. SLB&M.
   (Describe by rectangular co-ordinates or by one course and distance with reference to U. S. Government Survey Corner — Copy description from well owner's approved application)
6. Date on which work on well or tunnel was begun Oct 13 1958 (Strike words not needed)
7. Date on which work on well or tunnel was completed or abandoned.................. (Strike words not needed)
8. Maximum quantity of water measured as flowing, pumped or..................on completion of well or tunnel in sec. ft..................; or in gals. per minute 35 Date.................. (Strike words not needed)

DETAIL OF COLLECTING WORKS:

9. **WELL:** It is drilled, dug, flowing or pump well. Temperature of water..................°F. (Strike words not needed)
   (a) Total depth of well is 164 ft. below ground surface.
   (b) If flowing well, give water pressure (hydrostatic head) above ground surface 6 ft.
   (c) If pump well, give depth from ground surface to water surface before pumping..................
   ....; during pumping..................
   (d) Size and kind of casing 2" (If only partially cased, give details)
   (e) Depth to water-bearing stratum.................. (If more than one stratum, give depth to each)
   (f) If casing is perforated, give depth from ground surface to perforations..................
   (g) Log of well 0 – 11 clay 11 – 18 gravel 18 – 60 clay 60 – 65 sand 65 – 85 clay 85 – 135 clay & sand 135 – 150 sand 150 – 164 gravel. pumped 35 G.P.M.
   (h) Well was equipped with cap, valve, or..................to control flow. (Strike words not needed)

(Over)

RECEIVED
DEC 23 1958
STATE ENGINEER
COUNTER

2142 N.W.E.
corded N.T.Y. 9-1-42
ling J.A.W. 1-8-43
checked M.V. 1-11-43
o Assigned
1-11-43
ell

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Report No. 2682
Filed Aug. 27, 1942
Rec. By Counter P.C.
Ret'd

Report of Well and Tunnel Driller

STATE OF UTAH

(Separate report shall be filed for each well or tunnel)

GENERAL INFORMATION:

Report of well or tunnel driller is hereby made and filed with the State Engineer, in accordance with Sections 100-3-22, Revised Statutes of Utah 1933, as amended by Session Laws of 1935. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of well or tunnel. Failure to file such report constitutes a misdemeanor.)

1. Name and address of person, ~~company or corporation boring~~ or drilling well ~~or tunnel~~ (Strike words not needed)

   Sylvester Kilpack, 4353 So. State St. Murray, Utah

2. Name and address of owner of well ~~or tunnel~~ Geneve (Strike words not needed)

   Keith Holbrook, ~~18th West, 8th North~~ 483 7th Ave., Salt Lake City, Utah

3. Source if supply is in Salt Lake County;

   (Leave blank) drainage area; (Leave blank) artesian basin

4. The number of approved application to appropriate water is A-14818

5. Location of well ~~or mouth of tunnel~~ is situated at a point S. 253 ft. and E. 71.7 ft. from the W¼ Cor. of Sec. 27, T. 1 N., R. 1 W., SLB&M.

   (Describe by course and distance with reference to U. S. Government Survey Corner — Copy description from well owner's approved application)

6. Date on which work on well ~~or tunnel~~ was begun July 11, 1942 (Strike words not needed)

7. Date on which work on well ~~or tunnel~~ was completed ~~or abandoned~~ Aug. 1, 1942 (Strike words not needed)

8. Maximum quantity of water flowing, ~~pumped or dipped~~ on completion of well ~~or tunnel~~ in sec. (Strike words not needed)

   ft. ; or in gals. per minute 3 ; Date 8-1-42

DETAIL OF COLLECTING WORKS:

9. WELL: It is a drilled, ~~dug~~, flowing ~~or pump well.~~ Temperature of water °F. (Strike words not needed)

   (a) Total depth of well is 225 ft. below ground surface.

   (b) If flowing well, give water pressure (hydrostatic head) above ground surface 3 ft.

   (c) If pump well, give depth from ground surface to water surface before pumping ; during pumping

   (d) Size and kind of casing 2" new black pipe. (If only partially cased, give details)

   (e) Depth to water bearing stratum 220 (If more than one stratum, give depth to each)

   (f) If casing is perforated, give depth from ground surface to perforations 223

   (g) Log of well 3" soil; 3'-85' clay; 85-92 sand; 92-98 clay; 98-103 sand; 103-147 clay; 147-185 sand; 185-220 clay; 220-225 fine gravel.

VED STATE
EER COUNTER
T 27, 1942

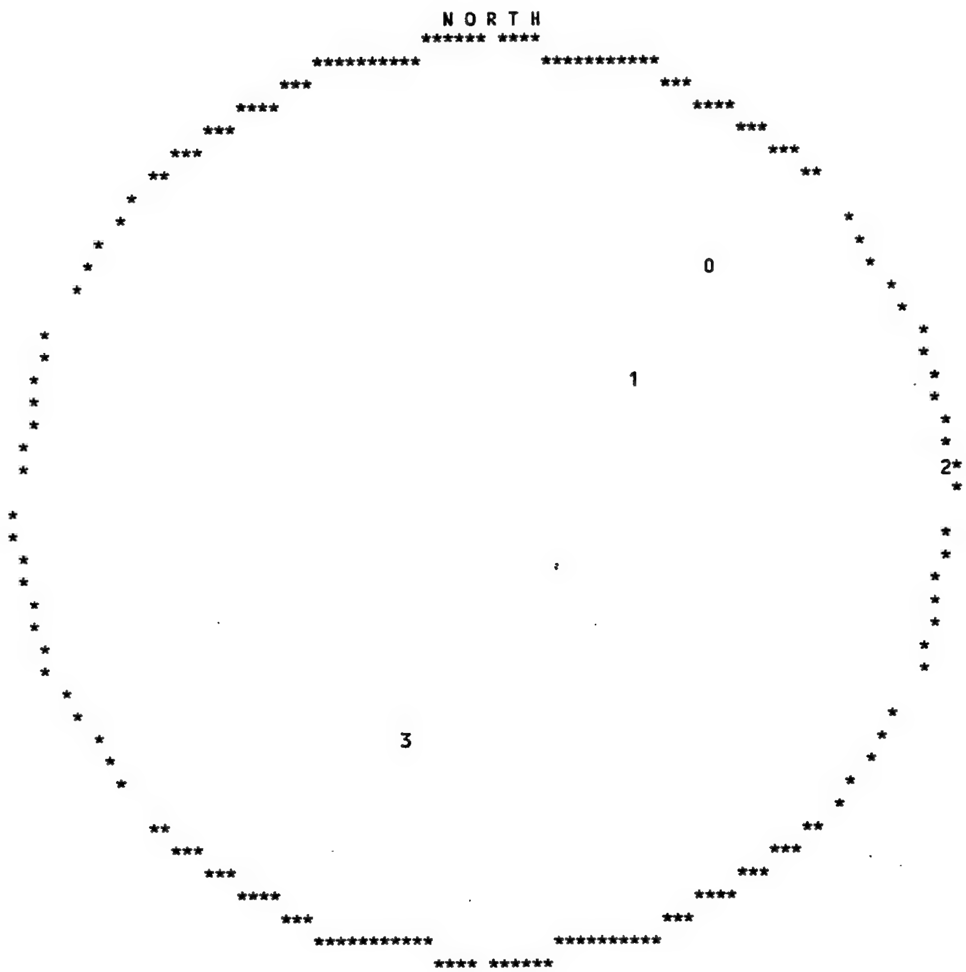
   (h) Well was equipped with ~~cap~~, valve, or Valve to control flow. (Strike words not needed)

(Over)

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED WED, APR 28, 1993, 2:35 PM
PLOT SHOWS LOCATION OF 4 POINTS OF DIVERSION

PLOT OF AN AREA WITH A RADIUS OF 15840 FEET FROM A POINT
N 1900 FEET, W 2200 FEET OF THE SE CORNER,
SECTION 28 TOWNSHIP 1N RANGE 1W SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 6000 FEET



UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	CFS	QUANTITY AND/OR	AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER DEPTH YEAR	LOG	POINT OF DIVERSION DESCRIPTION NORTH	EAST	CNR	SEC	TWN	RNG	B&M	U N N	A P P	P E R	T E R	S U R	U G W	P T P	R E D
0	59 4513	100.0000		.00	SLC Sewer Outlet and/or Canal		S 220	W 45	NE	22	1N	1W	SL	X				X			
		WATER USE(S): MUNICIPAL POWER OTHER					PRIORITY DATE: 06/24/1977														
		Salt Lake City Corporation (Public Utili 1530 SOuth West Temple Street					Salt Lake City						UT								
1	59 1735	.5000		.00	Underground Water Drain		N 714	W 101	S4	22	1N	1W	SL	X					X		
		WATER USE(S): IRRIGATION MUNICIPAL OTHER					PRIORITY DATE: 10/21/1964														
		Western Horizon Homes Inc. P.O. Box 1499					Salt Lake City						UT 84110								
2	57 3569	3.0000		.00		N	S 2536	E 2711	NW	25	1N	1W	SL			X			X		
		WATER USE(S): MUNICIPAL OTHER					PRIORITY DATE: 00/00/1850														
		Salt Lake City Corporation Dept. of Wate 1530 South West Temple					Salt Lake City						UT 84115								
3	59 3437	.0000		100000.00	Jordan River		S 1300	E 200	NW	4	1S	1W	SL	X							X
		WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING MUNICIPAL OTHER					PRIORITY DATE: 11/02/1967														
		Central Utah Water Conservancy District 355 West 1300 South					Orem						UT 84058								

WRNUM: 59-4513 APPLICATION/CLAIM NO.: A49381 CERT. NO.:

OWNERSHIP***

NAME: Salt Lake City Corporation (Public Utilities) OWNER MISC:
ADDR: 1530 SOuth West Temple Street
CITY: Salt Lake City STATE: UT ZIP: INTEREST:

LAND OWNED BY APPLICANT? Yes

DATES, ETC.***

Filing: 06/24/1977 Priority: 06/24/1977 Advertise Paper: Date: 09/01/1977 Protested? N Appr/Rej: / /

Proof Due: / / Ext Filed: / / Elec/Proof: Filed: / / Cert. or WUC Issued: / /

Lap, Etc.: / /

PD Book No. Type of Right: APPL Status: UNAP Source of Info: APPL Map: Date Verified: / / Initials:

PD REMARKS REFERENCE -- Name: Interest: Flow: Type of Right: Priority: Source:

LOCATION OF WATER RIGHT***

FLOW: 100.0 cfs SOURCE: SLC Sewer Outlet and/or Canal

TRIBUTARY 1: TRIBUTARY 2:

COUNTY: Salt Lake COMMON DESCRIPTION: DRAINAGE AREA: Lower Jordan River-West

POINTS OF DIVERSION -- SURFACE:
(1) S 2200 ft E 200 ft from NW cor, Sec 10, T 1N, R 1W, SLBM
Diverting Works: Source:
(2) S 220 ft W 45 ft from NE cor, Sec 22, T 1N, R 1W, SLBM
Diverting Works: Source:

USES OF WATER RIGHT***

CLAIMS USED FOR PURPOSE DESCRIBED: 4513
Referenced To: Claims Groups: Type of Reference -- Claims: Purpose: Remarks:

###MUNICIPAL: Salt Lake City Corporation PERIOD OF USE: 01/01 TO 12/31

###POWER: Unnamed Steam Generation Power Plant, rated at . PERIOD OF USE: 01/01 TO 12/31

###OTHER General Industrial Uses. PERIOD OF USE: 01/01 TO 12/31

E N D O F D A T A

WRNUM: 59-1735 APPLICATION/CLAIM NO.: A36492 CERT. NO.:

OWNERSHIP

NAME: Western Horizon Homes Inc. OWNER MISC:
ADDR: P.O. Box 1499
CITY: Salt Lake City STATE: UT ZIP: 84110 INTEREST:

LAND OWNED BY APPLICANT?

DATES, ETC.

Filing: 10/21/1964 Priority: 10/21/1964 Advertise Paper: Date: / / Protested? Appr/Rej: / /

Proof Due: / / Ext Filed: / / Elec/Proof: Filed: / / Cert. or WUC Issued: / /

Lap, Etc.: / /

PD Book No. Type of Right: APPL Status: UNAP Source of Info: APPL Map: Date Verified: / / Initials:

PD REMARKS REFERENCE -- Name: Interest: Flow: Type of Right: Priority: Source:

LOCATION OF WATER RIGHT

FLOW: 0.5 cfs SOURCE: Underground Water Drain

TRIBUTARY 1: TRIBUTARY 2:

COUNTY: Salt Lake COMMON DESCRIPTION: DRAINAGE AREA: Lower Jordan River-West

POINT OF DIVERSION -- UNDERGROUND:
(1) N 714 ft W 101 ft from S4 cor, Sec 22, T 1N, R 1W, SLBM DIAM: ins. DEPTH: to ft. YEAR DRILLED: WELL LOG?

PLACE OF USE OF WATER RIGHT

	NORTH-EAST4 NE	NW	SW	SE	NORTH-WEST4 NE	NW	SW	SE	SOUTH-WEST4 NE	NW	SW	SE	SOUTH-EAST4 NE	NW	SW	SE
Sec 22 T 1N R 1W SLBM									X	X	X	X				
Sec 27 T 1N R 1W SLBM					X	X	X	X	X	X	X	X				

USES OF WATER RIGHT

CLAIMS USED FOR PURPOSE DESCRIBED: 1735
Referenced To: Claims Groups: Type of Reference -- Claims: Purpose: Remarks:

###IRRIGATION

Tot Irr. Acrg.: 23.75	NORTH EAST QUARTER NE	NW	SW	SE	NORTH WEST QUARTER NE	NW	SW	SE	SOUTH WEST QUARTER NE	NW	SW	SE	SOUTH EAST QUARTER NE	NW	SW	SE	Section Totals
Sec 22 T 1N R 1W SLBM									X	X	X	X					0.00
Sec 27 T 1N R 1W SLBM					X	X	X	X	X	X	X	X					0.00

or a Total of .00 acres. Sole Supply: acres Diversion Limit: PERIOD OF USE: 04/01 TO 10/31

###MUNICIPAL: Rose Park PERIOD OF USE: 01/01 TO 12/31

###OTHER Subdivision development including swimming pools, parks, playgrounds, etc. PERIOD OF USE: 01/01 TO 12/31

END OF DATA

WRNUM: 57-3569 APPLICATION/CLAIM NO.: U1042 CERT. NO.:

OWNERSHIP

NAME: Salt Lake City Corporation Dept. of Water Supply OWNER MISC:
ADDR: 1530 South West Temple
CITY: Salt Lake City STATE: UT ZIP: 84115 INTEREST: 100%

LAND OWNED BY APPLICANT?

DATES, ETC.

Filing: 12/02/1935 Priority: 00/00/1850 Advertise Paper: Date: / / Protested? Appr/Rej: / /

Proof Due: / / Ext Filed: / / Elec/Proof: Filed: / / Cert. or WUC Issued: / /

Lap, Etc.: / /

PD Book No. Type of Right: UGWC Status: Source of Info: UGWC Map: Date Verified: 02/24/1992 Initials: JC

PD REMARKS REFERENCE -- Name: Interest: Flow: Type of Right: Priority: Source:

LOCATION OF WATER RIGHT

FLOW: 3.0 cfs SOURCE: Wasatch Springs Underground Water

TRIBUTARY 1: TRIBUTARY 2:

COUNTY: Salt Lake COMMON DESCRIPTION: DRAINAGE AREA: Lower Jordan River-East

POINT OF DIVERSION -- UNDERGROUND:
(1) S 2536 ft E 2711 ft from NW cor, Sec 25, T 1N, R 1W, SLBM DIAM: ins. DEPTH: to ft. YEAR DRILLED: WELL LOG? N

REMARKS:

No consumptive use for the municipal purposes.

USES OF WATER RIGHT

CLAIMS USED FOR PURPOSE DESCRIBED: 3569
Referenced To: Claims Groups: Type of Reference -- Claims: Purpose: Remarks:

###MUNICIPAL: Salt Lake City Corporation PERIOD OF USE: 01/01 TO 12/31

###RECREATION Bath houses PERIOD OF USE: 01/01 TO 12/31

OTHER COMMENTS

The water supply was originally obtained from a natural spring and was later augmented by the driving of tunnels.

E N D O F D A T A

WRNUM: 59-3437 APPLICATION/CLAIM NO.: A38519 CERT. NO.:

OWNERSHIP

NAME: Central Utah Water Conservancy District
ADDR: 355 West 1300 South
CITY: Orem STATE: UT ZIP: 84058

OWNER MISC:
INTEREST:

LAND OWNED BY APPLICANT?

DATES, ETC.

Filing: 11/02/1967 Priority: 11/02/1967 Advertise Paper: Date: 09/16/1971 Protested? PH Appr/Rej: / /

Proof Due: / / Ext Filed: / / Elec/Proof: Filed: / / Cert. or WUC Issued: / /

Lap, Etc.: / /

PD Book No. Type of Right: APPL Status: UNAP Source of Info: APPL Map: Date Verified: 05/18/1992 Initials: ELA

PD REMARKS REFERENCE -- Name: Interest: Flow: Type of Right: Priority: Source:

LOCATION OF WATER RIGHT

FLOW: 100000.0 acre-feet SOURCE: Jordan River

TRIBUTARY 1: TRIBUTARY 2:

COUNTY: Salt Lake COMMON DESCRIPTION: DRAINAGE AREA: Lower Jordan River-West

POINTS OF DIVERSION -- SURFACE:
(1) N 1400 ft W 150 ft from SE cor, Sec 23, T 1S, R 2W, SLBM
Diverting Works: Source:
(2) N 2000 ft E 2350 ft from SW cor, Sec 11, T 2S, R 1W, SLBM
Diverting Works: Source:
(3) N 2400 ft W 1600 ft from SE cor, Sec 11, T 3S, R 1W, SLBM
Diverting Works: Source:

POINTS OF REDIVERSION
(1) S 1300 ft E 200 ft from NW cor, Sec 4, T 1S, R 1W, SLBM
Diverting Works: Source:
(2) N 2000 ft W 3300 ft from SE cor, Sec 17, T 2N, R 1W, SLBM
Diverting Works: Source:
(3) N 50 ft E 1050 ft from SW cor, Sec 28, T 2N, R 1W, SLBM
Diverting Works: Source:
(4) S 50 ft W 120 ft from NE cor, Sec 29, T 2N, R 1W, SLBM
Diverting Works: Source:
(5) N 1490 ft E 550 ft from SW cor, Sec 1, T 2S, R 1W, SLBM
Diverting Works: Source:
(6) N 990 ft E 2000 ft from SW cor, Sec 14, T 2S, R 1W, SLBM
Diverting Works: Source:
(7) S 200 ft W 1200 ft from NE cor, Sec 14, T 2S, R 1W, SLBM
Diverting Works: Source:
(8) S 1500 ft E 500 ft from NW cor, Sec 23, T 2S, R 1W, SLBM
Diverting Works: Source:
(9) S 200 ft E 2500 ft from NW cor, Sec 11, T 3S, R 1W, SLBM
Diverting Works: Source:
(10) ft E 1500 ft from SW cor, Sec 13, T 3S, R 1W, SLBM
Diverting Works: Source:
(11)N 2000 ft E 3500 ft from SW cor, Sec 35, T 3S, R 1W, SLBM
Diverting Works: Source:

WRNUM 59-3437 continued*****

PLACE OF USE OF WATER RIGHT**

	NORTH-EAST4 NE NW SW SE	NORTH-WEST4 NE NW SW SE	SOUTH-WEST4 NE NW SW SE	SOUTH-EAST4 NE NW SW SE
ALL T 1N R 1E SLBM	*			
ALL T 1N R 1W SLBM	*			
ALL T 1N R 2W SLBM	*			
ALL T 1S R 1E SLBM	*			
ALL T 1S R 1W SLBM	*			
ALL T 1S R 2W SLBM	*			
ALL T 1S R 3W SLBM	*			
ALL T 2S R 1E SLBM	*			
ALL T 2S R 1W SLBM	*			
ALL T 2S R 2W SLBM	*			
ALL T 2S R 4E SLBM	*			
ALL T 2S R 5E SLBM	*			
ALL T 2S R 6E SLBM	*			
ALL T 3S R 1E SLBM	*			
ALL T 3S R 1W SLBM	*			
ALL T 3S R 2W SLBM	*			
ALL T 3S R 4E SLBM	*			
ALL T 3S R 5E SLBM	*			
ALL T 3S R 6E SLBM	*			
ALL T 3S R 7E SLBM	*			
ALL T 4S R 1E SLBM	*			
ALL T 4S R 1W SLBM	*			
ALL T 4S R 2E SLBM	*			
ALL T 4S R 2W SLBM	*			
ALL T 4S R 4E SLBM	*			
ALL T 4S R 5E SLBM	*			
ALL T 4S R 6E SLBM	*			
ALL T 5S R 1E SLBM	*			
ALL T 5S R 1W SLBM	*			
ALL T 5S R 2E SLBM	*			
ALL T 5S R 3E SLBM	*			
ALL T 6S R 1E SLBM	*			
ALL T 6S R 1W SLBM	*			
ALL T 6S R 2E SLBM	*			
ALL T 6S R 3E SLBM	*			
ALL T 7S R 1E SLBM	*			
ALL T 7S R 1W SLBM	*			
ALL T 7S R 2E SLBM	*			
ALL T 7S R 3E SLBM	*			
ALL T 8S R 1E SLBM	*			
ALL T 8S R 1W SLBM	*			
ALL T 8S R 2W SLBM	*			
ALL T 9S R 1W SLBM	*			
ALL T 9S R 2W SLBM	*			
ALL T 10S R 1W SLBM	*			
ALL T 11S R 1W SLBM	*			

USES OF WATER RIGHT**

CLAIMS USED FOR PURPOSE DESCRIBED: 3437 Type of Reference -- Claims: Purpose: Remarks:
Referenced To: Claims Groups:

###IRRIGATION *---NORTH EAST QUARTER--*---NORTH WEST QUARTER--*---SOUTH WEST QUARTER--*---SOUTH EAST QUARTER--* Section Totals
NE NW SW SE * NE NW SW SE * NE NW SW SE * NE NW SW SE *
Tot Irr. Acrg.: 50000.00* acres Diversion Limit: PERIOD OF USE: 04/01 TO 10/31
or a Total of .00 acres. Sole Supply:

###STOCKWATERING: 0 Equivalent Livestock Units Diversion Limit: PERIOD OF USE: 01/01 TO 12/31

The water will be used to incidental stockwatering purposes.

###DOMESTIC: Diversion Limit: PERIOD OF USE: 01/01 TO 12/31

The water will be used for domestic purposes outside of the municipalities along the Wasatch Front from Provo City on the south to Salt Lake City on the north, in Heber Valley and Kamas Valley, and in Goshen Valley.

###MUNICIPAL: Municipalities along Wasatch Front PERIOD OF USE: 01/01 TO 12/31

###OTHER The water will be used for fish & wildlife,recreation,and other project uses. PERIOD OF USE: 01/01 TO 12/31

OTHER COMMENTS**

Application protested by: Utah Power & Light Company; Kennecott Copper Corporation; Division of Wildlife Resources.

SEGREGATION HISTORY***

This Right as originally filed:

	FLOW IN CFS	QUANTITY IN ACRE-FEET	WATER USES: IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)
		200000.0	125000.00		

The following Water Rights have been Segregated from this Water Right:

	FLOW IN CFS	QUANTITY IN ACRE-FEET	IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)
(1) WRNUM: 59- 4616 APPL#: A38519a NAME: Central Utah Water Conservancy District FILED: 02/10/1978 STATUS: UNAP APPR/REJ: / /		100000.0	75000.00		

	CFS	ACRE-FEET	IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)
59-3437 currently has: -->		100000.0	50000.00	ERROR	ERROR

All STOCK-ERROR has been SEGREGATED OFF.
All DOMESTIC-ERROR has been SEGREGATED OFF.
All MUNICIPAL-ERROR has been SEGREGATED OFF.
All OTHER-ERROR has been SEGREGATED OFF.

END OF DATA

APPENDIX B
FIELD CHANGE REQUESTS

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO._1_
2. PAGE _1___OF 1 _

3. PROJECT___UTANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER__UT014.14.02
5. APPLICABLE DOCUMENT__SITE INVEST. SAMPLING AND ANALYSIS PLAN

6. DESCRIPTION OF CHANGE:
The requirement to analyze soil gas samples obtained at various sites around the UTANG Base for TCE according to the standards set forth in the IRP must either be changed to a qualitative rather than quantitative method, or abandoned altogether.

7. REASON FOR CHANGE:
TCE is difficult to detect using the CP-Sil 5 column supplied with the Photovac 10S70 Gas Chromatograph (GC) because the column length is short and the photoionization detector (PID) is very sensitive to double bonds. The short column and the PID work very well with BTEX compounds because they have numerous double bonds and are at least 100 times more sensitive to the PID than TCE. Also according to the PA 1989 all TCE used at the base was poured down the sanitary sewer until 1970 when use of TCE was discontinued. After a period of time TCE undergoes reductive dehalogenation which is the removal of one Cl atom and the addition of one H atom. It degrades into DCE, DCA, vinyl chloride and finally into chloroethane. TCE has a 300-day half life in a naturally occurring soil-groundwater system (Dragun, 1988).

8. RECOMMENDED DISPOSITION:
We propose to run a TCE standard using a neat solution of TCE mixed with zero air and observe the retention time for comparison.

9. PRESENT & COMPLETED WORK IMPACT:
After we have determined the retention time we can go back over the chromatograms an determine if any of the unknown retention times are within the allowable percentage ranges to be considered TCE. With this information we would also be able to determine " ball-park" concentrations of TCE in the previously run samples.

10. REQUESTED BY:

[signature] Nov 17-1992

Field/Project Manager Date

11. FINAL DISPOSITION:
CHANGE ACCEPTED AS WRITTEN.

12. APPROVAL:

WALT [signature] NOV-20-1992

HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 2
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.02
5. APPLICABLE DOCUMENT SITE INVESTIGATION SAMPLING AND ANALYSIS PLAN

6. DESCRIPTION OF CHANGE:
The requirement to calibrate the PHOTOVAC 10S70 portable gas chromatograph (GC) utilizing a three point calibration curve and detection limit analyses (UANG IRP page 3-30) is impossible to execute. Therefore, this requirement must be suspended.

7. REASON FOR CHANGE:
The PHOTOVAC series of portable gas chromatographs are operated using four different libraries capable of storing 25 compounds each. A calibration standard containing 1 part per million (ppm) of several compounds could be stored in Library 1, a 10 ppm standard could be stored in Library 2, and a 50 ppm standard could be stored in Library 3. But three standards could not be placed into the same library to perform a three point calibration of that instrument and achieve accurate results.

8. RECOMMENDED DISPOSITION:
We advise that a calibration standard of one concentration be installed into Library 1, a standard of another concentration in Library 2, and so on. After the instrument is calibrated with each standard the results obtained when a standard of "unknown concentration" is analyzed, will be compared to the concentration of the actual calibration standard. If the percent difference of the "unknown standard" is within 20% of the actual standard then the GC will be considered calibrated for that standard. If the result obtained is not within 20% of the actual concentration of the calibration standard the "unknown standard" will be analyzed until the results indicate it is within the limits.

9. PRESENT & COMPLETED WORK IMPACT:
This change will not affect any of the past or present sample analysis or calibration results as this is the only acceptable method of operation. All results utilizing this method indicate that it is working and samples analyzed with the photoionization detector (PID) correlate almost exactly with total organic results obtained with the GC.

10. REQUESTED BY: GAW

[signature] 12-7-92

Field/Project Manager Date

11. FINAL DISPOSITION

AFTER DISCUSSION WITH ANGRC & HAZWRAP STAFF, THE CHANGE IS ACCEPTED.

12. APPROVAL:

[signature] 10 DEC '93

HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 3
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.02
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN- SAMPLE DESIGNATION AND DOCUMENTATION

6. DESCRIPTION OF CHANGE:
Due to the current field books being soft bound and the requirement in section 2-48 that the documents be hardboard bound, we request a procedural waiver to use the bound notebooks with a polyethylene cover and sequentially numbered pages already purchased. The notebooks meet all requirements except for hardcovers because they are bound with a durable waterproof polyethylene cover.

7. REASON FOR CHANGE:
The requirement that the site logbook, field logbook, and field equipment logbook (see page 2-48) be a bound book with a hard cover and sequentially numbered pages has been changed since we could not purchase the hard covered notebooks at the time of the field program, therefore these were used with the belief that they met HAZWRAP requirements.

8. RECOMMENDED DISPOSITION:
We believe that due to the fact that the notebooks have a soft cover should not have a bearing on their contents or the durability of the notebook and therefore no change in the notebooks should be made.

9. PRESENT & COMPLETED WORK IMPACT:
This will have no impact on the present or completed work on the site.

10. REQUESTED BY:

Field/Project Manager 12-7-92
Date

11. FINAL DISPOSITION:
APPROVED - A CHANGE TO OUR REQUIREMENTS HAS BEEN REQUESTED. HARD COVERED FIELD LOG BOOKS ARE NOT REQUIRED - POLYETHYLENE COVER IS ADEQUATE.

12. APPROVAL:

HAZWRAP Project Manager 10 DEC '92
Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 4
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.02
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN- SAMPLING PROCEDURES

6. DESCRIPTION OF CHANGE:
The requirement to composite the sample remaining in the California rings after removal of the VOA sample using a cut and quartering technique should be changed because a representative sample is not always obtained from the remaining material (pg 2-43).

7. REASON FOR CHANGE:
We feel that if contamination is detected in a discrete zone within a 2 -1/2 foot split spoon sampler and a single 3-inch VOA sample is removed the remaining 27 inches of material should not be composited because a biased sample might result from this method.

8. RECOMMENDED DISPOSITION:
If a discrete interval is sampled we feel strongly that the next discrete interval immediately following the VOA sample should be analyzed for the remaining constituents. In order to obtain a more accurate indication of the subsurface contaminants present at the site.

9. PRESENT & COMPLETED WORK IMPACT:
This will only have an impact on the first few samples collected at the Waste POL Area-Site 2. The method described above has been used for sample collection on the remaining samples.

10. REQUESTED BY: GAW

[signature] 12-7-92
Field/Project Manager Date

11. FINAL DISPOSITION:
AFTER DISCUSSION WITH THE ANGRE AND HAZWRAP STAFF, THIS CHANGE IS APPROVED.

12. APPROVAL:

[signature] 10 DEC 93
HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 5
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-change from SW-846 Method 8240 to SW-846 Method 8010/8020 for soil analysis.

6. DESCRIPTION OF CHANGE:

The requirement that soil samples be analyzed according to EPA SW-846 Method 8240 for volatiles in the SITE INVESTIGATION SAMPLING AND ANALYSIS PLAN FOR THE 151 ST AIR REFUELING GROUP UTAH AIR NATIONAL GUARD (MARCH 1992) should be revised to include EPA SW-846 Method 8010/8020 for samples so that results of the analyses will correspond to analytical results of ground water samples. This is in reference to the memo from Richard Westmoreland HAZWRAP Analytical Chemist, dated 5 November 1992.

7. REASON FOR CHANGE:

The change is made in order to comply with the memo from Richard Westmoreland, dated 5 November 1992. The ground water samples will be analyzed using EPA Method SW-846 8010/8020 which is a GC method that quantifies the concentration of certain organic compounds, depending on the concentration of the compound to very low levels; 1 part per billion (ppb). The EPA Method SW-846 8240 is a GC/MS method that qualifies the compounds but may only have a level of accuracy to 5 ppb. Therefore, due to the regulations governing ground water the 8010/8020 method is required. Since not all the compounds analyzed for are the same with each method it makes more sense to use the same method on both soil and ground water samples so that correlation between contaminants can be documented.

8. RECOMMENDED DISPOSITION:

We recommend that the EPA SW-846 Method 8010/8020 be performed on all soil and ground water/surface water samples in lieu of EPA SW-846 Method 8240.

9. PRESENT & COMPLETED WORK IMPACT:

This will have an impact on some samples collected to date. The soil samples collected between 4 December and up to and including 9 December 1992 will be analyzed using Method 8240. The soil and water samples collected on and after 10 December 1992 will be analyzed using Method 8010/8020.

10. REQUESTED BY:

12-23-92

Field/Project Manager — Date

11. FINAL DISPOSITION:

APPROVED AND COORDINATED WITH THE ANGRC.

12. APPROVAL:

JAN 5, 1993

HAZWRAP Project Manager — Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 6
2. PAGES 1 OF 1

3. PROJECT__ UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER_ UT 014.14.03
5. APPLICABLE DOCUMENT__FIELD SAMPLING PLAN-extending length of time between sampling events

6. DESCRIPTION OF CHANGE:

The requirement that each sampling event stopped by a hiatus of 24 hours or longer should be revised to include storms (when you are unable to sample due to adverse weather conditions but the sampling team does not demobilize), weekends (48 hours) when the sampling team does not leave the area, and equipment is not demobilized.

7. REASON FOR CHANGE:

If a rain or snow storm causes a break in the sampling process of several days during the week it is not considered another sampling event, if the samplers continue sampling after the storm abates. Therefore, if the samplers take a break over the weekend (48-hours) and do not demobilize it should not be considered another sampling event.

8. RECOMMENDED DISPOSITION:

We petition that a sampling event be amended to incorporate a break for the weekend between sampling sites. As stated in Document No.: HZ/RAP-102-1 page 25 of 109 section 3.7 FIELD QUALITY CONTROL SAMPLES " A sampling event is considered to be from the time the sampling personnel arrive at the site until these personnel leave for more than 24 h". We feel it is not justified to require a second Quality Control sample after the weekend, a break of 48 hours, because the sampling procedure has not changed and the field team has not demobilized. Therefore, nothing has changed that would alter the integrity of the sample collection procedures or the sample itself.

9. PRESENT & COMPLETED WORK IMPACT:

This will not have an impact on any samples collected to this date. If we start ground water sampling one week and continue to collect ground water samples the following week, both should be considered part of the same sampling event and not two different sampling events. Yet if we follow the HAZWRAP procedures they become two different events and need the QA/QC samples and the added cost associated with the two different events.

10. REQUESTED BY:

[signature] 12-23-92

Field/Project Manager Date

11. FINAL DISPOSITION:

APPROVED - MODIFICATION OF HZ/RAP-102-1 REGARDING THE DEF. OF "SAMPLING EVENT." HAS BEEN MAKE AND MAY BE INCORP. WITH NEXT REVISION.

12. APPROVAL:

[signature] 5 JAN '93

HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 7
2. PAGES 1 OF 2

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-SOIL BORING, PIEZOMETER, AND MONITORING WELL INSTALLATION AND ABANDONMENT

6. DESCRIPTION OF CHANGE:

The requirement written on page 2-40 of the FINAL UANG -SITE INVESTIGATION SAMPLING AND ANALYSIS PLAN. States "The screens will be placed so that approximately 5 feet of screen extend above the static water level. The bottom of the screens will extend to about 10 feet below the static water table. This length will allow for fluctuations in the water table". Under the circumstances present at the Utah Air National Guard Base, this method would result in the screen starting at just below the ground surface and continuing to a depth of 17.5 feet below ground surface. Therefore, we recommend changing the length of the screen to 10 feet and include 3-5 feet of riser to the ground surface. We intend to keep the 2-foot sediment trap at the base of the screen. Due to the depth below ground surface of the static water table, some monitoring well locations will need to have a reduction in the amount of sand pack placed around the riser. As stated in the plan " The sand pack will be placed around the screen from approximately 1 foot below the bottom of the end cap to a minimum of two feet above the top of the screen. A minimum of two feet of pellitized, granular or flake bentonite will be placed above the filter pack". We recommend that a minimum of one foot of sand be placed above the top of the screen. At the time of well placement, ground water will be withdrawn in the wells with one foot of sand, then the sand will be added as necessary to assure that 1 foot of sand will be present above the screen.

7. REASON FOR CHANGE:

The reason we intend to make the change is that the screen would extend to the ground surface if we followed the protocol stated above and we would not be able to create an impenetrable surface seal, increasing the possibility of contaminated surface water entering the monitoring well. We recommend that two feet of screen extend above the static water table, followed by 1 foot of sand pack, and 2 feet of pellitized, granular or flake bentonite and cement/bentonite grout to the surface. This method is being used because the static water level was encountered at a depth of 5 feet below ground surface in some piezometers. In locations where the static ground water is encountered at depths greater than 5 feet below ground surface, monitoring wells will be constructed using the minimum amount of sand, bentonite and cement/bentonite grout as originally stated in the SAP.

8. RECOMMENDED DISPOSITION:

We petition that the work plan be altered to incorporate the above changes.

1. FIELD CHANGE NO. 7
2. PAGES 2 OF 2

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on any present or future activities on site.

10. REQUESTED BY:

12-28-92

Field/Project Manager   Date

11. FINAL DISPOSITION:
COORDINATED WITH TECHNICAL OPERATIONS AND APPROVED.

12. APPROVAL:

5 JAN 93

HAZWRAP Project Manager   Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 8
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT SITE INVESTIGATION SAMPLING AND ANALYSIS PLAN-FIELD SAMPLING PLAN-BASE WIDE PIEZOMETERS

6. DESCRIPTION OF CHANGE:
In the original SAP it requires the installation of six piezometers. We would like to modify the SAP and install a total of ten piezometers to better understand the static water table on the Utah Air National Guard Base (UANG).

7. REASON FOR CHANGE:
The reason we recommend the change is that we suspect the City Drain has a dramatic influence on the static water table at the UANG Base and we cannot determine the full affect the City Drain has on the static water table unless we strategically install several more piezometers on the perimeter and east central locations of the base.

8. RECOMMENDED DISPOSITION:
We petition that the work plan be altered to incorporate the above changes.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on any present or future activities on site, except to better define the static ground water table underlying the UANG Base.

10. REQUESTED BY:

Robert W. M[illegible]
Field/Project Manager

1-8-93
Date

11. FINAL DISPOSITION:
AFTER COORDINATION, OVERALL PROJECT SCOPE IS NOT EXPECTED TO BE IMPACTED AND THE CHANGE PROVIDES MORE INFORMATION. THE CHANGE IS APPROVED AS STATED.

12. APPROVAL:

[illegible signature]
HAZWRAP Project Manager

13 JAN 93
Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 9
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 2-WASTE POL SPILL NEAR BUILDING 1527

6. DESCRIPTION OF CHANGE:
The number of soil borings according to section 2.2.3.2 states that three soil borings will be installed and six soil samples will be collected for analysis. We request three more soil borings for a total of six. The SAP allows for one more soil boring in the optional activities (2.2.3.3). The two additional borings requested come from sites where optional work is not required.

7. REASON FOR CHANGE:
The reason to add more soil borings is to obtain a better understanding of the extent of potential contamination present at Site 2. In so doing we will be able to better define the extent of the contamination at this location and save future mobilization, drilling and sampling costs.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS. It should also define the extent of the contamination detected in the first three soil borings.

10. REQUESTED BY:

Robert W. Hayes 1-8-93

Field/Project Manager Date

11. FINAL DISPOSITION:
APPROVED AS WRITTEN. NO OVERALL PROJECT SCOPE IS ANTICIPATED.

12. APPROVAL:

[signature] 15 JAN 93

HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 10
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 3-DRUM BURIAL AREA

6. DESCRIPTION OF CHANGE:
The number of soil borings according to section 2.2.4 states that in the event that contamination is detected in the soil samples, four optional soil borings may be installed and eight soil samples collected. We recommend that an additional add two more soil borings for a total of six to investigate the site. The two additional borings requested should come from the ANG optional site investigation program.

7. REASON FOR CHANGE:
The reason to add more soil borings is to obtain a better understanding of the extent of potential contamination present at Site 3. A total of 14 barrels were discovered in the area originally defined in the SAP. Another grouping of barrels was discovered near the original site and the additional two borings will be used to investigate this new area. Also, the City of Salt Lake operates a large fire training area adjacent to the drum burial area and contamination from the fuel burned and floating on the fire training area surface might be impacting the soils in the vicinity of SITE 3. In so doing we should be able to better define the extent of the contamination at this location and save future mobilization, drilling and sampling costs.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS. They should also define the extent of the contamination detected in one of the four original soil borings.

10. REQUESTED BY:

[signature] 1-8-93

Field/Project Manager Date

11. FINAL DISPOSITION:
NO OVERALL CHANGE IN PROJECT SCOPE ANTICIPATED.
CHANGE IS APPROVED.

12. APPROVAL:

[signature] 15 JAN 93

HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 11
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 4-FIRE TRAINING AREA 1

6. DESCRIPTION OF CHANGE:
The number of soil borings according to section 2.2.5.2 states that four soil borings will be advanced and eight soil samples will be collected. We intend to add six more soil borings for a total of ten. The SAP allows for two more soil borings in the optional activities, section 2.2.5.3. The four additional borings requested come from sites where optional work is not required.

7. REASON FOR CHANGE:
The reason to add more soil borings is to obtain a better understanding of the extent of potential contamination present at Site 4. We have delineated the southern, and eastern extent of the site. Yet we continue to drill additional soil borings to the west and north of the site and results from them indicate the presence of several hydrocarbon compounds. If we install an additional four borings we should be able to define the north and west extent of Site 4. In so doing we will be better able to define the extent of the contamination at this location and save future mobilization, drilling and sampling costs.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

Robert W. M[illegible] 1-11-93

Field/Project Manager Date

11. FINAL DISPOSITION:

NO CHANGE IN PROJECT SCOPE IS ANTICIPATED. CHANGE IS APPROVED.

12. APPROVAL:

WALT [illegible] 15 JAN 93

HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 12
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 5-FIRE TRAINING AREA 2

6. DESCRIPTION OF CHANGE:
The number of soil borings required for Site 5 investigation, according to section 2.2.6.1 states that four soil borings will be advanced and eight soil samples will be collected. We request three additional soil borings for a total of seven. The SAP allows for two more soil borings in the optional activities, section 2.2.6.3. The one additional boring requested should come from a site where optional work is not required.

7. REASON FOR CHANGE:
The reason to add more soil borings is to obtain a better understanding of the extent of potential contamination present at Site 5. In so doing we will be better able to define the extent of the contamination at this location and save future mobilization, drilling and sampling costs.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

[signature] 1-11-93
Field/Project Manager Date

11. FINAL DISPOSITION:
NO ANTICIPATED SCOPE INCREASE FOR THIS PROJECT. CHANGE IS APPROVED.

12. APPROVAL:

[signature] 15-JAN'93
HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 13
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 7-OIL SLUDGE LAGOON

6. DESCRIPTION OF CHANGE:
The number of soil borings according to section 2.2.8.1 states that three soil borings will be advanced and six soil samples will be collected. We request seven more soil borings for a total of 10. The SAP does not allow for any soil borings in the optional activities, section 2.2.8.3. The seven additional borings requested should come from sites where optional work is not required.

7. REASON FOR CHANGE:
The reason to add more soil borings is to obtain a better understanding of the extent of potential contamination present at Site 5. In so doing we will be better able to define the extent of the contamination at this location and save future mobilization, drilling and sampling costs.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

Field/Project Manager 1-11-93
Date

11. FINAL DISPOSITION:
NO INCREASED SCOPE IN EXPECTED. CHANGE IS APPROVED AS STATED.

12. APPROVAL:

HAZWRAP Project Manager 15 JAN 93
Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 14
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 3-DRUM BURIAL AREA

6. DESCRIPTION OF CHANGE:
The number of monitoring wells according to section 2.2.4 states that one downgradient monitoring well will be advanced and one groundwater sample will be collected. We intend to add one more monitoring well for a total of two. The SAP allows for one monitoring well in the optional activities, section 2.2.4. The one additional monitoring well requested will come from a site where optional work is not required.

7. REASON FOR CHANGE:
The reason to add more soil borings is to obtain a better understanding of the extent of potential contamination present at Site 3. A total of 14 barrels were discovered in the area originally defined in the SAP. Also, the City of Salt Lake operates a large fire training area adjacent to the drum burial area, and adjacent to a concrete pad located north of the UANG property. This fire training area contains a mixture of fuel and water at the surface and may be impacting the groundwater in the vicinity. Information obtained from a static water table map indicates that groundwater flows in a southeasterly direction toward the City Drain. We request that a monitoring well be installed between the fire training area and drum burial area, and the second monitoring well on the southeast side of the main drum burial area. In so doing we will be better able to define the extent of the contamination at this location and save future mobilization, drilling and sampling costs.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

[signature] 1-11-93
Field/Project Manager Date

11. FINAL DISPOSITION:
NO CHANGE IN SCOPE - APPROVED AS WRITTEN.

12. APPROVAL:

[signature] 15 JAN '93
HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 15
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 2

6. DESCRIPTION OF CHANGE:
The number of sampling locations per boring according to section 2.2.3.2 states that during confirmation and optional sampling programs, two soil samples will be collected from each boring. We intend to collect only one sample from the deep zone in soil borings SB4, SB5 and SB6 in order to determine the vertical extent of contamination at this site.

7. REASON FOR CHANGE:
Made-land (man made) makes up the top four (4) feet of the site. Due to the potential for the made-land to be placed "post-contamination", and the contaminants of concern at this site to be solvents (exhibiting a specific gravity greater than water), it is not economical to collect and analyse a sample from the upper four feet of the borings. Therefore, only one soil sample will be collected from each boring at the interval between the made-land/native soil interface and the static water level, noted during drilling.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

[signature] 12-11-92
Field/Project Manager Date

11. FINAL DISPOSITION:
Coord'd with Lee Perry, NGB, and approved as written.

12. APPROVAL:

[signature] Dec 14, 1992
HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 16
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 3

6. DESCRIPTION OF CHANGE:
The number of sampling locations per boring according to section 2.2.4 states that during confirmation and optional sampling programs, two soil samples will be collected from each boring. We intend to collect only one sample from the deep zone in soil borings SB4 and SB5 in order to determine the vertical extent of contamination at this site.

7. REASON FOR CHANGE:
Made-land (man made) makes up at least the top four (4) feet of the site. Due to the potential for the made-land to be placed "post-contamination", and the contaminants of concern at this site to be "off-spec" JP-4 and solvents it is not economical to collect and analyse a sample from the upper four feet of the borings. Therefore, only one soil sample will be collected from each boring at the interval between the made-land/native soil interface and the static water level, noted during drilling.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

[signature] 12-11-92
Field/Project Manager Date

11. FINAL DISPOSITION:
Coord'd with Lee Perry, NGB, and approved as written.

12. APPROVAL:

[signature] DEC 14, 1992
HAZWRAP Project Manager Date

Form 9

FIELD CHANGE REQUEST FORM

1. FIELD CHANGE NO. 17
2. PAGES 1 OF 1

3. PROJECT UANG INSTALLATION RESTORATION PROGRAM
4. PROJECT NUMBER UT 014.14.03
5. APPLICABLE DOCUMENT FIELD SAMPLING PLAN-CONFIRMATION ACTIVITIES AT SITE 7

6. DESCRIPTION OF CHANGE:
The number of sampling locations per boring according to section 2.2.8.2 states that during confirmation and optional sampling programs, two soil samples will be collected from each boring. We intend to collect only one sample from the deep zone in soil borings SB4, SB6, SB8 and SB10 in order to determine the vertical extent of contamination at this site.

7. REASON FOR CHANGE:
Made-land (man made) makes up the top four (4) feet of the site. Due to the potential for the made-land to be placed "post-contamination", and the contaminants of concern at this site to be waste oil, and other wastes including paints, thinners, fuels, and solvents it is not economical to collect and analyse a sample from the upper four feet of the borings. Therefore, only one soil sample will be collected from each boring at the interval between the made-land/native soil interface and the static water level, noted during drilling.

8. RECOMMENDED DISPOSITION:
We recommend that the Field Sampling Plan be amended to reflect this change.

9. PRESENT & COMPLETED WORK IMPACT:
This will not have an impact on past work but might help save future costs associated with an RI/FS.

10. REQUESTED BY:

[signature] 12-11-92
Field/Project Manager Date

11. FINAL DISPOSITION:
COORD'D WITH LEE PERRY, NGB, AND APPROVED AS WRITTEN

12. APPROVAL:

[signature] DEC 14, 1992
HAZWRAP Project Manager Date

APPENDIX C
MONITORING WELL DEVELOPMENT AND SAMPLING FORMS

APPENDIX C

TABLE OF CONTENTS

Monitoring Well Development Forms

1993

WELL DEVELOPMENT LOG	Well No.: MW1	Page 1 of 1
Installation: UTANG		Site: 86
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE	Dev. Contractor: A.C. EXPLORATION	
Dev. Start: Date 1-21-93 Time 15:20	Dev. End: Date: 1-21 Time 16:45	Csg Dia:
Developed by: DAVE MOTT		Dev. Rig (Y/N)

Dev. Method move water through sand pack to remove fine silt & sand particles; resulting in a reduction in turbidity

Equipment: Compressor: INGERSOLL-RAND 375, Surge Block, water trap.

Pre-Dev. SWL 4.82 ft Maximum drawdown during pumping 3.54 ft of 0.5 gpm
Range and Average discharge rate Average: 0.5 gpm Range: 0.5 → 1.0 gpm
Total quantity of material bailed 5 gal
Total quantity of water discharged by pumping 17 gal
Disposition of discharge water ~~free of sus 5 gal~~ DFB
free of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
1:25	22 gal	8.36	—	light brown	12.3	8.1	1740 mS	220 mV
					12.7	8.0	1725 mS	226 mV
					12.4	8.0	1696 mS	224 mV

Comments:

Reviewed by: [signature]

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW1	Page 1 of 1
Installation: 11TANG		Site: Site 1
Project No.: WTO14-13	Client/Project: HAZWRAP	
HAZWRAP Contractor: Engineering-Science	Dev. Contractor: P.C. Exploration	
Dev. Start: Date 1/21 Time 10:00	Dev. End: Date: 1/21 Time 12:30	Csg Dia: 2"
Developed by: ~~Ste~~ Dave Mott / Dallas		Dev. Rig (Y/N) Y

Explanation of Method ~~Dev. Method~~ ~~Surge Block~~ – moves water through sand pack to remove fine silt & clay particles. – to remove most turbidity

Type of Equipment: – Compressor, Surge Block

Pre-Dev. SWL 6.72 Maximum drawdown during pumping ______ ft of ______ gpm

Range and Average discharge rate 2.5 gpm

Total quantity of material bailed 5 gallons

Total quantity of water discharged by pumping 25 gallons

Disposition of discharge water cloudy, some sand, silt

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
2.5 hrs	20	15.35		Brown				

Comments: ______

Reviewed by: ______

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW1	Page 1 of 1
Installation: UTANG		Site: 51
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE	Dev. Contractor: P.C. EXPLORATION	
Dev. Start: Date 1-21-93 Time 14:15	Dev. End: Date: 1-21 Time 15:05	Csg Dia:
Developed by: DAVE MOTT / PHIL BRENETT		Dev. Rig (Y/N) Y

Dev. Method: Move water through sand pack to remove fine silt & sand particles; resulting in a reduction in turbidity

Equipment: Compressor: INGERSOLL-RAND 375; Surge Block; ~~Air~~ Water trap

Pre-Dev. SWL 5.42 Maximum drawdown during pumping ~~7.22~~ DFB 1.80 ft of 2 gpm

Range and Average discharge rate 2 ± 1 gpm gpm

Total quantity of material bailed 5 gal

Total quantity of water discharged by pumping 40 gal

Disposition of discharge water ~~Sandy, silty~~ DFR free of suspended solids.

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
0:50	~~13.6~~ DFB 45 gal	7.22	—	Light brown	13.6	8.7	1818 µS	~~68 mV~~ DFB 62 mV
			—		13.9	8.7	1769 µS	102 mV
			—		13.8	8.7	1723 µS	90 mV

Comments:

Reviewed by: Dennis Barst

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: mw1	Page 1 of 2
Installation: UTANG		Site: S2
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE	Dev. Contractor: P.C. EXPLORATION	
Dev. Start: Date 1-22-93 Time 12:15	Dev. End: Date 1-22-93 Time 13:15	Csg Dia:
Developed by: DAVE MOTT / PHIL BRUNETT		Dev. Rig (Y/N)

Dev. Method move water through sand pack to remove fine silt and sand, reducing the turbidity.

Equipment: surge block, bailer

Pre-Dev. SWL 4.5 Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate ______ gpm
Total quantity of material bailed 20 gal
Total quantity of water discharged by pumping —
Disposition of discharge water

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
1:00	20	—	—	—	—	—	—	water testing will begin during the next well development

Comments:

Reviewed by: Darin Brat

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 1	Page 2 of 2
Installation: UTANG		Site: S2
Project No. UT 014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE		Dev. Contractor:
Dev. Start: Date 1-26-95 Time 13:50	Dev. End: Date 1-26-95 Time 14:40	Csg Dia:
Developed by: DARIEN BROST		Dev. Rig (Y/N)

Dev. Method Drain water into well by bailing to remove fine sand & Silt particles from the sand pack.

Equipment: bailer

Pre-Dev. SWL 3.91 Maximum drawdown during pumping — ft of — gpm

Range and Average discharge rate — gpm

Total quantity of material bailed 20 gal

Total quantity of water discharged by pumping —

Disposition of discharge water Clear of suspended solids.

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
50 min	10	8.19	-	light brown	11.0	8.2	1720 mS	143 mV
					11.4	8.2	1688	143
					11.8	8.2	1715	145
					11.8	8.2	1760	146
					11.8	8.2	1745	145
					11.9	8.2	1730	143

Comments:

Reviewed by: Darien Brost

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 1	Page 1 of 1
Installation: UTANG		Site: S3
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: D.C. EXPLORATION	
Dev. Start: Date 1-21-98 Time 12:20	Dev. End: Date: 1-21-98 Time 13:36	Csg Dia:
Developed by: DAVE MOTT / PHIL BRENETT		Dev. Rig (Y/N)

Dev. Method ~~MOVE~~ water through sand pack, to remove fine silt & sand particles, resulting in a reduction in turbidity

Equipment: Compressor: INGERSOLL - RAND375; Surge Block; Water drop.

Pre-Dev. SWL 4.10 ft Maximum drawdown during pumping — ft of 2 gpm
Range and Average discharge rate 2 ± 1 gpm gpm
Total quantity of material bailed 10 gal
Total quantity of water discharged by pumping DFB ~~20~~ 40 gal
Disposition of discharge water ~~Sandy, Silty~~ DFB
Free of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
DFB ~~[illegible]~~ 1.16	50 gal	4.1 ft	—	light brown, Sandy	13.0	7.5	—	151 mV
			—	"	12.7	7.5	—	113 mV
			—	"	12.6	7.6	—	109 mV

Comments:

Reviewed by: Darin Best

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 2	Page 1 of 2
Installation: UTAWL		Site: S3
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: A.L. EXPLORATION	
Dev. Start: Date 1-22-93 Time 9:00	Dev. End: Date: 1-22-93 Time 10:15	Csg Dia:
Developed by: DAVE MOTT / PHIL BRUNETT		Dev. Rig (Y/N)

Dev. Method move water through the sand pack by surging to remove fine silt and sand from the sand pack.

Equipment: Surge, bailer.

Pre-Dev. SWL 7.5 ft Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 20
Total quantity of water discharged by pumping —
Disposition of discharge water

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
1:15	20	—	—	—	—	—	—	water testing will be conducted during the next well development.

Comments:

Reviewed by: Darwin Brunett

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 2	Page 2 of 2
Installation: UTANG		Site: 53
Project No.: UT04.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor:	
Dev. Start: Date 1-26-93 Time 09:55	Dev. End: Date: 1-26 Time 10:45	Csg Dia:
Developed by: DARIEN BROST		Dev. Rig (Y/N)

Dev. Method Draw water into well by bailing to remove fine sand & silt particles from the sand pack.

Equipment: bailer

Pre-Dev. SWL 6.23 ft Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 10
Total quantity of water discharged by pumping —
Disposition of discharge water Clear of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
50 min	10	9.24	–	dark brown	9.3	7.3	1843 µS	133 mV
					11.0	7.2	1852	73
					11.0	7.3	1843	57
					11.0	7.3	1841	53

Comments:

Reviewed by: Darien Brost

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: mw 1	Page 1 of 2
Installation: UTANL		Site: 54
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: P.C. EXPLORATION	
Dev. Start: Date 1-22-93 Time 11:15	Dev. End: Date: 1-22 Time 12:00	Csg Dia:
Developed by: DAVE MOTT & DFB		Dev. Rig (Y/N)

Dev. Method moved water through sand pack to remove fine silt & sand. resulting in a reduction in turbidity

Equipment: Surge block, bailer

Pre-Dev. SWL 4.0 Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 15 gal
Total quantity of water discharged by pumping —
Disposition of discharge water

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
45 min	15 gal	—	—	—	—	—	—	water testing will be conducted during the next well development

Comments:

Reviewed by: Darin Brost

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW1	Page 2 of 2
Installation: UTANG		Site: 54
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE	Dev. Contractor:	
Dev. Start: Date 1-26-93 Time 16:30	Dev. End: Date: 1-26 Time 17:50	Csg Dia:
Developed by: DARIEN PROST		Dev. Rig (Y/N)

Dev. Method: Draw water into well by bailing to remove fine sand & silt particles from the sand pack.

Equipment: bailer

Pre-Dev. SWL 4.59 Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 10
Total quantity of water discharged by pumping —
Disposition of discharge water No suspended solids.

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
	10	5.87	—	light brown	5.8	7.6	437	183
					5.9	7.5	440	180
					5.8	7.5	443	185

Comments:

Reviewed by: Darien Prost

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 1	Page 1 of 2
Installation: UTANG		Site: 55
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: D.C. EXPLORATION	
Dev. Start: Date 1-22-93 Time 10:30	Dev. End: Date: 1-22 Time 11:00	Csg Dia:
Developed by: DAVE MOTT & PHIL BRUNETT		Dev. Rig (Y/N)

Dev. Method move water through the sand pack by surging resulting fine silt and sand (fine) being removed from the sand pack.

Equipment: surge block, bailer

Pre-Dev. SWL 3.5 ft Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 20 gal
Total quantity of water discharged by pumping —
Disposition of discharge water

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
30	20	—	—	—	—	—	—	water testing will be conducted during the next well development.

Comments:

Reviewed by: [signature]

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 1	Page 2 of 2
Installation: UTANG		Site: 55
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE	Dev. Contractor:	
Dev. Start: Date 1-25-93 Time 16:00	Dev. End: Date: 1-25 Time 16:30	Csg Dia:
Developed by:		Dev. Rig (Y/N)

Dev. Method Drawing water into well by bailing to remove fine silt and sand from the sand pack.

Equipment: teflon bailer.

Pre-Dev. SWL 7.48 Maximum drawdown during pumping — ft of ____ gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 8
Total quantity of water discharged by pumping —
Disposition of discharge water free of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
30 min	8 gal	7.56		light brown	8.0°C	7.4	1790	-46 mV
					9.7°C	7.4	1775	-58 mV
					9.8°C	7.5	1772	-91 mV
					9.7°C	7.5	1770	-84 mV

Comments:

Reviewed by: Dan Brant

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW 1	Page 1 of 1
Installation: UTANG		Site: S6
Project No.: UT814.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: P.C. EXPLORATION	
Dev. Start: Date 1-22-93 Time 14:20	Dev. End: Date: 1-22 Time 14:40	Csg Dia:
Developed by: DAVE MOTT / PHIL BRENETT		Dev. Rig (Y/N)

Dev. Method Move water through sand pack to remove fine silt & sand particles; resulting in a reduction in turbidity

Equipment: Surge block, bailer

Pre-Dev. SWL 5.85 ft Maximum drawdown during pumping ______ ft of ______ gpm
Range and Average discharge rate ______ gpm
Total quantity of material bailed 20 gal
Total quantity of water discharged by pumping ______
Disposition of discharge water free of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
14:30	10	7.38	—	light	14.2	8.0	—	211 mV
14:40	10	6.77	—	brown	14.9	7.9	—	266 mV
					14.7	8.1	—	249 mV

Comments: PID was 0 ppm

Reviewed by: [signature]

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW2	Page 1 of 1
Installation: UTANG		Site: S6
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: P.C. EXPLORATION	
Dev. Start: Date 1-22-93 Time 14:50	Dev. End: Date: 1-22 Time 15:40	Csg Dia:
Developed by: DAVE MOTT / PAUL BRENETT		Dev. Rig (Y/N)

Dev. Method Move water through sand pack to remove fine silt & sand particles; resulting in a reduction in turbidity

Equipment: Surge block, bailer

Pre-Dev. SWL 7.59 Maximum drawdown during pumping ______ ft of ______ gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 15 gal
Total quantity of water discharged by pumping —
Disposition of discharge water free of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
15:15	10	14.30	-	light	14.3	8.0	1997	190
				brown	14.2	8.1	1991	185
15 min wait					14.8	8.2	1993	174
		Initial 9.65						
15:40	~~40~~ 5	Final 14.29						

Comments:

Reviewed by: [signature]

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW3	Page 1 of 1
Installation: UTANG		Site: 56
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: AC EXPLORATION	
Dev. Start: Date 1-22-93 Time 15:54	Dev. End: Date 1-22-93 Time 16:20	Csg Dia:
Developed by: DAVE MOTT / PHIL BRENETT		Dev. Rig (Y/N)

Dev. Method Move water through sand pack to remove fine silt & sand particles; resulting in a reduction in turbidity.

Equipment: Surge block, bailer

Pre-Dev. SWL 7.73 Maximum drawdown during pumping ______ ft of ______ gpm
Range and Average discharge rate ______ gpm
Total quantity of material bailed 10 gal
Total quantity of water discharged by pumping —
Disposition of discharge water Suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
16:06	7	18.52			10.0	7.2	1887	256
					11.5	7.2	1886	257
16:20	3				11.5	7.3	1889	252

Comments:

Reviewed by: Darin Burst

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW1	Page 1 of 2
Installation: UTANG		Site: 57
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor: P. C. EXPLORATION	
Dev. Start: Date 1-22-93 Time 11:15	Dev. End: Date: 1-22 Time 12:00	Csg Dia:
Developed by: PHIL BRUNETT		Dev. Rig (Y/N)

Dev. Method Move water through sand pack to remove fine silt and sand. resulting in a reduction in turbidity

Equipment: Surge block, bailer

Pre-Dev. SWL 4.0 Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 15 gal
Total quantity of water discharged by pumping —
Disposition of discharge water

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
45 min	15	—	—	—	—	—	—	water testing will be conducted at the next well development

Comments:

Reviewed by: Dawn Burt

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW1	Page 2 of 2
Installation: UTANL		Site: 57
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING - SCIENCE	Dev. Contractor:	
Dev. Start: Date 1-26-93 Time 15:20	Dev. End: Date: 1-26 Time 16:05	Csg Dia:
Developed by: DARIEN BROST		Dev. Rig (Y/N)

Dev. Method Draw water into well by bailing to remove fine sand & silt particles from the sand pack.

Equipment: bailer

Pre-Dev. SWL 5.68 Maximum drawdown during pumping — ft of — gpm
Range and Average discharge rate — gpm
Total quantity of material bailed 8
Total quantity of water discharged by pumping —
Disposition of discharge water Clear of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
	8	15.69	–	Clear	13.5	7.8	1153	123
				Very light brown	14.4	~~7.8~~ DFB O.K.		
				DFB	~~13.8~~	7.8	1168	95
					14.4	7.9	1153	64
					14.5	7.9	1151	53
					14.5	7.9	1154	54

Comments:

Reviewed by: Darien Brost

SOP/WELL-LOG

WELL DEVELOPMENT LOG	Well No.: MW2	Page 1 of 1
Installation: UTANG		Site: 57
Project No.: UT014.13	Client/Project: HAZWRAP	
HAZWRAP Contractor: ENGINEERING-SCIENCE	Dev. Contractor: A.C. EXPLORATION	
Dev. Start: Date Time 10:30	Dev. End: Date: Time 11:15	Csg Dia: 2"
Developed by: DAVE MOTT / Phil Brunett		Dev. Rig (Y/N)

Dev. Method move water through sand pack to remove fine silt & sand particles; resulting in a reduction in turbidity

Equipment: Compressor: INGERSOLL-RAND 375, Surge Block; Water trap

Pre-Dev. SWL 4.5 ft Maximum drawdown during pumping ~~4.5~~ ft of 1.5 gpm
Range and Average discharge rate 1.5 ± 1 gpm gpm
Total quantity of material bailed 20 gal
Total quantity of water discharged by pumping 5 gal
Disposition of discharge water ~~Cloudy, sand, silty~~ DFB
free of suspended solids

Time	Volume Removed (gal)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp. °C	pH	Conductivity	Remarks
45 min	25	4.5 ft	—	dark silty water Little Sand. Brown	14.2	7.8	179 3 μS	236 mv

Comments:

Reviewed by: Dom Brost

SOP/WELL-LOG

Groundwater Sampling Forms

1993

GROUND-WATER SAMPLING FORM

Date: 1-28-93	Time: 11:15 - 13:50	Sample Number: BG-MW1
Location: UANG-		
Well No.: BG 1		Sketch on Back (Yes/No):
Total Depth: 16.48		Number of Screened Interval(s): 1
Depth to Top of Screen:		
Screen Length: 10'		
Well Secure (Yes/No):		Comments:
Sampler: Teflon bailer Darien Brost		Other present: Robert Graves
Organic Vapor Detector Serial No. ~~DFB 40.8~~ NA890212		Reading: 40.8
Background Organic Vapor Reading: 0		
Weather: Wind: —	Precipitation: Light mist	Air Temperature: ~20°F
Water Level Measurement: Serial No.:		
Well Labeled (Yes/No):		Elev. Ref. for Water Level:
Comments:		
Odor: NO		
Water Level Measurement Method: ~~5.88 ft~~ DFB measure from top of PVC Casing (wellhead)		
Depth to Product 1st NA	Depth to Interface/Water NA 5.88 ft	Product Thickness NA
Purge Volume Computation Data:		
Inside Casing Diameter(d.): 2 in		Borehole Diameter (dH): 10¼ in
Outside Casing Diameter(d.): ~~NA~~ 2-3/8" O.D.		Total Well Depth (TD): 16.48 ft
Depth to Water from GS: 5.88 ft		Depth to Seal Base(s): —
Calculated Well Volume: 1.73 gal		
Required Purge Volume: 5.19 → 8.65 ft		
Actual Purge Volume: 7 gal		
Purge Method: bailing		
Serial No's. Cond. Hanna ~~...~~	ph Hanna - Wtr. tester ~~...~~	Temp. Hanna water test ~~...~~ Redox.

Cond.	µmhos/cm	ph	Temp.	Redox mv
Initial				
Purged cycle				
Sample	1098	7.3	8.1	337 mv

Sample Type:	8010 (2-40ml) 8020 (2-40ml) 8270 (2-1L) 8080 (2-1L) PPM - 1500ml
Turbid (Yes/No):	slightly - light brown
Sample Filtered:	yes - pressure bailer
Reviewed by:	R. W. Graves
Form Complete (Yes/No)	Decon. Complete (Yes/No):

51

ATTACHMENT 9.1
FP 5-5

GROUND-WATER SAMPLING FORM

Date: 2-1-95	Time: 1540 - 1745	Sample Number: 51-MW1-3
Location: Site 1		
Well No.: MW1	Sketch on Back (Yes/No):	
Total Depth: 17.05"	Number of Screened Interval(s): 1	
Depth to Top of Screen: 9.05'		
Screen Length: 10'		
Well Secure (Yes/No):	Comments:	
Sampler: RWG ~~[illegible]~~	Other present:	
Organic Vapor Detector Serial No.: PA910420	Reading: 1.8 ppm	
Background Organic Vapor Reading: ~~1.8 ppm~~ 0.0 ppm		
Weather: Wind: 5-10 mph	Precipitation: Snowing	Air Temperature: 30's
Water Level Measurement: Serial No.:		
Well Labeled (Yes/No):	Elev. Ref. for Water Level:	
Comments:		
Odor: none detected ? H_2S (slight)		
Water Level Measurement Method: ~~Slope Indicator~~ water level Indicator		
Depth to Product 1st NA	Depth to Interface/Water NA	Product Thickness NA
Purge Volume Computation Data: 17.05-5.98 = 11.07 x 1.63 = 1.80		
Inside Casing Diameter(d.): 2"	Borehole Diameter (dH): 10.25"	
Outside Casing Diameter(d.): ?	Total Well Depth (TD): 17.05'	
Depth to Water from GS: 5.98 — 6.06 PTS	Depth to Seal Base(s):	
Calculated Well Volume: 1.80 gallons		
Required Purge Volume: 1.80 x 5 = 9.0 gallons		
Actual Purge Volume: 9.5 gallons		
Purge Method: bailer		

Serial No's. Cond.	ph Hanna wt. testr	Temp. Hanna wtr. testr	Redox.

Cond.	~~mhos/cm~~ uS/cm	ph	Temp. °C	Redox mv
Initial	1740	8.5	10.2	100
Purged cycle	1754	8.5	10.2	062
	1794	8.5	10.5	-093
Sample	1793	8.6	10.5	-110

Sample Type: Pesticides Method 8080 and duplicate 4-950ml amber bottles

Turbid (Yes/No): marginal

Sample Filtered: no

Reviewed by: RWG

Form Complete (Yes/No) RWG | Decon. Complete (Yes/No): RWG

ATTACHMENT 9.1
FP 5-5

GROUND-WATER SAMPLING FORM

Date: 2/10/93	Time: 1215	Sample Number: UANG S2-MW1(MS/MSD)

Location: Site 2 UANG

Well No.: MW-1 (resample MS/MSD)	Sketch on Back (Yes/No): No
Total Depth: 17 ft	Number of Screened Interval(s): 1

Depth to Top of Screen: 5.0'

Screen Length: 10 ft

Well Secure (Yes/No): yes	Comments: flush mount
Sampler: Mitch Jensen	Other present: Robert Graves
Organic Vapor Detector Serial No.: DA 910420	Reading: NA
Background Organic Vapor Reading: NA, snowing	

Weather: Wind: none	Precipitation: snow	Air Temperature: ≈ 36°F

Water Level Measurement: Serial No.: B-1632

Well Labeled (Yes/No): yes	Elev. Ref. for Water Level: 4213.18 MSL

Comments: initial water is clear, final water nearly clear

Odor:

Water Level Measurement Method: Water Level Indicator

Depth to Product	Depth to Interface/Water	Product Thickness
1st NA	3.98	NA

Purge Volume Computation Data: 17 − 3.98 ≈ 13 ft; 13 × .163 gal/ft = 2.1 gal

Inside Casing Diameter(d.): 2 inch I.D.	Borehole Diameter (dH): 10.25"
Outside Casing Diameter(d.): 2 3/8" O.D.	Total Well Depth (TD): 17 ft
Depth to Water from GS: 3.98 ft	Depth to Seal Base(s): 2.0'

Calculated Well Volume: 2.1 gal

Required Purge Volume: 5 × 2.1 = 10.5 gallons

Actual Purge Volume: 10 gallons

Purge Method: teflon bailer

Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009	Redox.

~~Cond.~~ time	~~mhos/cm~~ µS/cm	ph	Temp.	Redox mv
Initial 1225	1492	7.6	10.3°C	140
Purged cycle 1256	1890	8.0	10.3	161
1300	1864	7.8	10.5	172
Sample 1305	1802	8.0	9.5	173 WL 6.6 ft BGS

Sample Type: VOA, SVOA and PPM, triple volume for MS/MSD

Turbid (Yes/No): No

Sample Filtered: yes

Reviewed by: Robert W Graves

Form Complete (Yes/No): Yes	Decon. Complete (Yes/No): Yes

GROUND-WATER SAMPLING FORM

Date: 2/2/93	Time: 1430	Sample Number: 93 - MW1
Location: Site 3		
Well No.: MW-1	Sketch on Back (Yes/No):	
Total Depth: ~~20'~~ 19'	Number of Screened Interval(s): 1	
Depth to Top of Screen: 8.0'		
Screen Length: 10'		
Well Secure (Yes/No): yes	Comments:	
Sampler: ~~[illegible]~~	Other present: Mitch Jensen	
Organic Vapor Detector Serial No.: PA910420	Reading: 12.0 ppm	
Background Organic Vapor Reading: 10.2 ppm		
Weather: Wind: slight breeze	Precipitation: none	Air Temperature: ≈ 35°F
Water Level Measurement: Serial No.: B-1632		
Well Labeled (Yes/No): yes	Elev. Ref. for Water Level: Top of above ground casing 4209.65 MSL	
Comments:		
Odor: none		
Water Level Measurement Method: electronic oil/water interface probe		
Depth to Product 1st NA	Depth to Interface/Water NA	Product Thickness NA
Purge Volume Computation Data:		
Inside Casing Diameter(d.): 2 inch I.D.	Borehole Diameter (dH): 10.25 inch	
Outside Casing Diameter(d.): 2 3/8" O.D	Total Well Depth (TD): 19.4 ft at top of casing above ground	
Depth to Water from ~~GS~~ top of casing (above ground): 5.78 ft	Depth to Seal Base(s): 2.0'	
Calculated Well Volume: (19.4-5.78)×0.163 = 2.2 gal		
Required Purge Volume: 5×2.2 = 11.1 gal		
Actual Purge Volume: unknown		
Purge Method: bailer (teflon)		
Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009 / Redox.

Cond.	µmhos/cm µS/cm	ph	Temp.	Redox mv
Initial ~~X~~ 1446	1892	7.2	7.1 °C	187 WL 5.87 ft
Purged cycle 1533	1836	7.4	6.4	034
1538	1818	7.4	7.0	033
1546	1797	7.4	5.5	033
Sample				

Sample Type: VOA & SVOA, collected Dup called MW-3	
Turbid (Yes/No): yes	
Sample Filtered: NA	
Reviewed by: R W Graves	
Form Complete (Yes/No)	Decon. Complete (Yes/No):

GROUND-WATER SAMPLING FORM

Date: Feb 2, 1993	Time: 1505	Sample Number: S3-MW2
Location: MW2 site 3		
Well No.: MW2	Sketch on Back (Yes/No):	
Total Depth: 23.2 ft to top of casing	Number of Screened Interval(s): 1	
Depth to Top of Screen: 7.0'		
Screen Length: 10 ft		
Well Secure (Yes/No): yes	Comments: well is above ground and WL measurements are from casing	
Sampler: Mitch Jensen	Other present: Darien Brost	
Organic Vapor Detector Serial No.: PA 910420	Reading: 7.9 ppm	
Background Organic Vapor Reading: 6.7 ppm		
Weather: Wind: light breeze	Precipitation: none	Air Temperature: < 40°F
Water Level Measurement: Serial No.: B-1632		
Well Labeled (Yes/No): yes	Elev. Ref. for Water Level: 4209.51 MSL	
Comments:		
Odor: none		
Water Level Measurement Method: water level indicator		
Depth to Product 1st NA	Depth to Interface/Water 9.2'	Product Thickness NA
Purge Volume Computation Data:		
Inside Casing Diameter(d.): 2 inch I.D.	Borehole Diameter (dH): 10.25 inches	
Outside Casing Diameter(d.): 2 3/8" O.D.	Total Well Depth (TD): 23.2 ft	
Depth to Water from GS: 9.2 ft top of casing	Depth to Seal Base(s):	
Calculated Well Volume: .163 gal/ft (23.2 - 9.2) = 2.3 ft		
Required Purge Volume: 5 x 2.3 = 11.5 ft		
Actual Purge Volume: 12 gallons		
Purge Method: bailer		
Serial No's. Cond. CSI 9009 / ph CSI 9009	Temp. CSI 9009	Redox.

Cond.		µmhos/cm	ph	Temp.	Redox mv
Initial		1855	7.4	6.9°C	028 mv
Purged cycle	1700	1765	7.4	6.9	009 mv
	1704	1762	7.4	7.9°C	018 mv
Sample	1708	1762	7.4	8.2°C	011 mv

Sample Type:	VOA and SVOA
Turbid (Yes/No):	yes
Sample Filtered:	NA
Reviewed by:	RWGraves
Form Complete (Yes/No)	Decon. Complete (Yes/No):

GROUND-WATER SAMPLING FORM

Date: 2-3-93	Time: 1020
Sample Number: S4-MW1	
Location: UANG site 4	
Well No.: MW-1	Sketch on Back (Yes/No): No
Total Depth: 17.0 ft	Number of Screened Interval(s): 1
Depth to Top of Screen: 5.0'	
Screen Length: 10 ft	
Well Secure (Yes/No): yes	Comments:
Sampler: Mitch Jensen	Other present: NA
Organic Vapor Detector Serial No.: PA910420	Reading: 13.5 ppm
Background Organic Vapor Reading: 3.7 ppm	
Weather: Wind: slight NW breeze	Precipitation: none
Air Temperature: 32-35°F	
Water Level Measurement: Serial No.: B-1632	
Well Labeled (Yes/No): yes UANG S4 MW1	Elev. Ref. for Water Level: North edge of casing of well 4209.11. MSL
Comments:	
Odor: none	
Water Level Measurement Method: water level Indicator	

Depth to Product 1st	Depth to Interface/Water	Product Thickness
NA	~~NA~~ 4.95	NA

Purge Volume Computation Data: 0.163 gal/ft (17 - 4.95) = 1.96 gallons	
Inside Casing Diameter(d.): 2 inch I.D.	Borehole Diameter (dH): 10.25"
Outside Casing Diameter(d.): 2 3/8" O.D	Total Well Depth (TD): 17.0 ft
Depth to Water from GS: 4.95 ft	Depth to Seal Base(s): 2.0'
Calculated Well Volume: 1.96 gallons	
Required Purge Volume: 5 x 1.96 = 9.8 gallons	
Actual Purge Volume: 10 gallons	
Purge Method: teflon bailer	
Serial No's. Cond. CST 9009	ph CST
Temp.	Redox.

Cond.	~~μmhos/cm~~ uS/cm	ph	Temp.	Redox mv
Initial				
Purged cycle	575	7.8	9.3°C	
	607	7.8	9.8°C	
	484	7.8	8.7°C	
Sample	478	7.8	8.4°C	

Sample Type:	
Turbid (Yes/No): yes	
Sample Filtered: no	
Reviewed by: Robert W. Graver	
Form Complete (Yes/No): Yes	Decon. Complete (Yes/No): Yes

GROUND-WATER SAMPLING FORM

Date: 2-4-93	Time: 0930	Sample Number: 55-MW1

Location: UANG 85 site 5

Well No.: MW-1	Sketch on Back (Yes/No): No
Total Depth: 20.0'	Number of Screened Interval(s): 1

Depth to Top of Screen: 5'

Screen Length: 10 ft

Well Secure (Yes/No): yes	Comments: Measured 1" depth from casing Well is above ground
Sampler: Mitch Jensen	Other present: Bob Graves
Organic Vapor Detector Serial No.: PR 910420	Reading: 0 ppm
Background Organic Vapor Reading: 0 ppm	

Weather: Wind: slight N breeze	Precipitation: light ~~rain~~ snow	Air Temperature: ≈35 °F

Water Level Measurement: Serial No.: B-1632

Well Labeled (Yes/No): yes	Elev. Ref. for Water Level: 4208.82' ~~[illegible]~~ MSL

Comments: initial water clear, bail water gray brown w/ sediment, final water not clear

Odor: none detected

Water Level Measurement Method: water level indicator

Depth to Product	Depth to Interface/Water	Product Thickness
1st NA	7.65'	NA

Purge Volume Computation Data: $(19.55 - 7.65) \times .163$ gal/ft $= 11.9 \times .163 = 1.94$

Inside Casing Diameter(d.): 2 inch I.D.	Borehole Diameter (dH): 10.25-inch
Outside Casing Diameter(d.): 2 3/8" O.D.	Total Well Depth (TD): 19.55 ft
Depth to Water from GS: 7.65 ft	Depth to Seal Base(s): 20'

Calculated Well Volume: 1.94 gallons

Required Purge Volume: 5 × 1.94 gallons = 9.7 gallons

Actual Purge Volume: ≈ 10 gallons

Purge Method: teflon bailer

Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009	Redox.

~~Cond:~~ time	~~umhos/cm~~ cond µS/cm	ph	Temp. °C	Redox mv
Initial 0952	1712	7.4	5.2	068
Purged cycle 1036	1689	~~7.6~~ 7.7	8.3	-130 WL 7.65'
1040	1732	7.7	8.3	-093
Sample 1045	1750	7.6	9.1	-113

Sample Type: 2-40 ml vials for 8010/8020; 2-1 liter amber bottles for 8010

Turbid (Yes/No): yes

Sample Filtered: No

Reviewed by: Robert W Graves

Form Complete (Yes/No): Yes	Decon. Complete (Yes/No): Yes

GROUND-WATER SAMPLING FORM

Date: 2-4-93	Time: 1028 - 1212	Sample Number: 56-MW1-
Location: Utah Air National Guard		
Well No.: 56-MW1	Sketch on Back (Yes/No): No	
Total Depth: 17.03	Number of Screened Interval(s): 1	
Depth to Top of Screen: 5.03		
Screen Length: 10'		
Well Secure (Yes/No): Yes	Comments:	
Sampler: Robert W Graves	Other present:	
Organic Vapor Detector Serial No.: PA910420	Reading: 4.5	
Background Organic Vapor Reading: 2.6		
Weather: Wind: 8-10 mph NW	Precipitation: minor-snow	Air Temperature: 30° F
Water Level Measurement: Serial No.: B-1632		
Well Labeled (Yes/No): Yes Y	Elev. Ref. for Water Level: 4210.93' MSL	
Comments:		
Odor: none observed		
Water Level Measurement Method: water level indicator		
Depth to Product 1st NA	Depth to Interface/Water 5.78'	Product Thickness NA
Purge Volume Computation Data: 11.25' x .163 = 1.83375 → 1.8 galls/casing		
Inside Casing Diameter(d.): 2" I.D.	Borehole Diameter (dH): 10.25"	
Outside Casing Diameter(d.): 2 3/8"	Total Well Depth (TD): 17.03'	
Depth to Water from GS: 5.78' / 5.82	Depth to Seal Base(s): 3.03'	
Calculated Well Volume: 1.8 gallons / casing length		
Required Purge Volume: 1.8 x 5 = 9.0 gallons		
Actual Purge Volume: 9.0 gallons		
Purge Method: bailing		
Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009	Redox.

Cond.	μmhos/cm	ph	Temp.	Redox mv
Initial	~~7~~ ~~2000~~ 1732	8.0	14.4C	174
Purged cycle	~~7~~ ~~2000~~ 1735	8.01	13.5	170
	1728	8.1	13.5	171
Sample				

Sample Type: Water - 8010, 8020, 8270	
Turbid (Yes/No): Yes	
Sample Filtered: Not.	
Reviewed by: R. W. Graves	
Form Complete (Yes/No): Yes	Decon. Complete (Yes/No): Yes

GROUND-WATER SAMPLING FORM

Date: 2-4-93	Time: 1330	Sample Number: 56-MW2
Location: UANG site 6		
Well No.: MW-2	Sketch on Back (Yes/No):	
Total Depth: 17.0	Number of Screened Interval(s): 1	
Depth to Top of Screen: 5.0		
Screen Length: 10 ft		
Well Secure (Yes/No):	Comments: flush mount well on flight line between planes	
Sampler: Mitch Jensen	Other present:	
Organic Vapor Detector Serial No.: PA910420	Reading: 34.9 ppm	
Background Organic Vapor Reading: [illegible] ppm		
Weather: Wind: 10-15 mph NW	Precipitation: None	Air Temperature: mid thirties
Water Level Measurement: Serial No.: B-1632		
Well Labeled (Yes/No):	Elev. Ref. for Water Level: 4209.22 MSL	
Comments: initial water light amber and free of suspended solids, final water clear		
Odor: none detected		
Water Level Measurement Method: water level indicator		
Depth to Product 1st NA	Depth to Interface/Water 7.1'	Product Thickness NA
Purge Volume Computation Data: (16.95 − 7.1) x .163 gal/ft = 1.6 gal l_w = 9.85		
Inside Casing Diameter(d.): 2 inch I.D.	Borehole Diameter (dH):	
Outside Casing Diameter(d.): 2 3/8" O.D.	Total Well Depth (TD): 16.95 ft	
Depth to Water from GS: 7.1 ft / 11.4' after 10 gal	Depth to Seal Base(s): 2.0' ft	
Calculated Well Volume: 1.6 gallons		
Required Purge Volume: ~~[illegible] gallons~~ 5 x 1.6 = 8 gallons		
Actual Purge Volume: ~~5 x 1.6 = 8 gallons~~ 8 to 9 gallons		
Purge Method: Teflon bailer.		

Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009	Redox.

~~Cond.~~ time	~~µmhos/cm~~ mS/cm cond	ph	Temp. °C	Redox mv
Initial 1414	1893	8.4	11.0	138
Purged cycle 1440	1817	8.6	11.0	-021 WL= 11.4'
1450	1836	8.4	11.1	-029
				WL= 8.9
Sample 1456 ~~1515~~	NA	NA	NA	

Sample Type: 2-40 ml vial for 8010/8020, 2-1L amber glass for 8270	
Turbid (Yes/No): No	
Sample Filtered: No	
Reviewed by: Robert W. [illegible]	
Form Complete (Yes/No)	Decon. Complete (Yes/No):

GROUND-WATER SAMPLING FORM

Date: 2-4-93	Time: 1341	Sample Number: 56-MW3
Location: WANG		
Well No.: 56-MW3	Sketch on Back (Yes/No): No	
Total Depth: 19.91 BTOC	Number of Screened Interval(s): 1	
Depth to Top of Screen: 5.0'		
Screen Length: 10'		
Well Secure (Yes/No): Yes	Comments: Above ground casing	
Sampler: Robert Graves	Other present: Mitch Jensen	
Organic Vapor Detector Serial No.: PA910420	Reading: 0.0	
Background Organic Vapor Reading: Malfunction due to water Vapor in Monitoring well.		
Weather: Wind: 10mph NW	Precipitation: None	Air Temperature: 35°
Water Level Measurement: Serial No.: B-1632		
Well Labeled (Yes/No): Yes	Elev. Ref. for Water Level: 4208.85 MSL	
Comments:		
Odor: Not observed		
Water Level Measurement Method: Oil/water interface probe		
Depth to Product 1st NA	Depth to Interface/Water 10.44	Product Thickness NA
Purge Volume Computation Data: 19.91-10.44 = 9.47 × .163 = 1.54361 → 1.5		
Inside Casing Diameter(d.): 2" I.D.	Borehole Diameter (dH): 10.25"	
Outside Casing Diameter(d.): 2 3/8" O.D.	Total Well Depth (TD): 19.91'	
Depth to Water from GS: 10.44' / 10.43'	Depth to Seal Base(s): 2.0'	
Calculated Well Volume: 1.5 gallons		
Required Purge Volume: 1.5 × 5 = 7.5 gallons		
Actual Purge Volume: ~ 8 gallons		
Purge Method: teflon bailer - 5 casing volumes		

Serial No's. Cond. CST 9009	ph CST 9009	Temp. CST 9009	Redox.

Cond.	~~umhos~~/cm uS/cm	ph	Temp.	Redox mv
Initial	1809	7.4	9.2	167
Purged cycle 1452	1739	7.3	8.2	103
1457	1741	7.0	8.9	131
Sample	1684	7.4	6.8	096

Sample Type: 8010, 8020, 8270.	
Turbid (Yes/No): Yes lgt brown	
Sample Filtered: No.	
Reviewed by: Robert W Graves	
Form Complete (Yes/No): Yes	Decon. Complete (Yes/No): Yes

ATTACHMENT 9.1
FP 5-5

GROUND-WATER SAMPLING FORM

Date: 2-3-93	Time: 1350	Sample Number: 57 - MW1

Location: UANG 57

Well No.: MW1	Sketch on Back (Yes/No):
Total Depth: 16.95 ft	Number of Screened Interval(s): 1

Depth to Top of Screen: 5.0 ft.

Screen Length: 10 ft

Well Secure (Yes/No): yes	Comments: flush mount well
Sampler: Mitch Jensen	Other present:
Organic Vapor Detector Serial No.: PA 910420	Reading: 16.5 ppm
Background Organic Vapor Reading: 3.3 ppm	

Weather: Wind: calm	Precipitation: none	Air Temperature: ~ 40°F

Water Level Measurement: Serial No.: B-1632

Well Labeled (Yes/No): yes	Elev. Ref. for Water Level: 4209.39 MSL

Comments: water level 13.35 ft after bailing 4 gallons (time 1427) 12.2 ft after 8 gallons

Odor: none detected

Water Level Measurement Method: water level indicator

Depth to Product	Depth to Interface/Water	Product Thickness
1st NA	5.45'	NA

Purge Volume Computation Data: (16.95 - 5.45) x .163 gal/ft = 1.87 gal

Inside Casing Diameter(d.): 2 inch	Borehole Diameter (dH): 10 1/4 inch
Outside Casing Diameter(d.): NA	Total Well Depth (TD): 16.95 ft
Depth to Water from GS: 5.45 ft	Depth to Seal Base(s): 2.0 ft.

Calculated Well Volume: 1.87 gal

Required Purge Volume: 5 x 1.87 = 9.4 gallons

Actual Purge Volume: 8 gallons

Purge Method: teflon bailer

Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009	Redox.

~~Cond.~~ time	~~µmhos/cm~~ µS/cm	ph	Temp.	Redox mv
Initial 1410 hr	1173	7.8	12.7°C	-003
Purged cycle 1440	1097	8.0	10.5°C	082
1551	1114	8.0	10.7°C	084
Sample				

Sample Type: 2 40 ml vials for 8010/8020, 2-1 liter amber for SVOA 1 liter PP for metals

Turbid (Yes/No): yes

Sample Filtered: metals sample filtered w/ pressure filter

Reviewed by: R W Graves

Form Complete (Yes/No)	Decon. Complete (Yes/No):

GROUND-WATER SAMPLING FORM

Date: 2-3-93	Time: ~~1603~~-1503-1720	Sample Number: UANG 57-MW2-
Location: Utah Air National Guard		
Well No.: UANG 57-MW2	Sketch on Back (Yes/No): No	
Total Depth: 16.63'	Number of Screened Interval(s): 1	
Depth to Top of Screen: 4.63		
Screen Length: 10'		
Well Secure (Yes/No): Yes	Comments:	
Sampler: Robert W Graves	Other present: NA	
Organic Vapor Detector Serial No.: PA 910420	Reading: NA	
Background Organic Vapor Reading: 0.0 ppm		
Weather: Wind: 10 mph NW	Precipitation: none	Air Temperature: 35°
Water Level Measurement: Serial No.: B-1632		
Well Labeled (Yes/No): Y	Elev. Ref. for Water Level: ~~TOC~~ 4209.45 MSL	
Comments:		
Odor: None observed		
Water Level Measurement Method: Oil/water interface probe		
Depth to Product 1st: NA	Depth to Interface/Water: ~~NA~~ 5.65'	Product Thickness: NA
Purge Volume Computation Data: 16.63 - 5.65 = 10.98' x .163 = 1.8 gallons / casing volume		
Inside Casing Diameter(d.): 2"	Borehole Diameter (dH): 10.25	
Outside Casing Diameter(d.): ~~[illegible]~~	Total Well Depth (TD): 16.63	
Depth to Water from GS: 5.65 / 5.65	Depth to Seal Base(s): 2.0 ft.	
Calculated Well Volume: 1.8 gallons		
Required Purge Volume: 1.8 x 5 = 9.00 gallons		
Actual Purge Volume: 9.5 gallons		
Purge Method: bailing –		
Serial No's. Cond. CSI 9009	ph CSI 9009	Temp. CSI 9009 / Redox. NA

Cond.	~~mhos/cm~~ μS/cm	ph	Temp.	Redox mv
Initial	1440	~~8~~ 7.7	8.3	192
Purged cycle	1529	7.7	7.9	174
	1527	7.7	9.9	171
Sample	1589	7.8	9.9	189

Sample Type: 2-40ml vials for 8010/8020, 2-950ml for SVOCs 1-500ml polypropylene for Metals	
Turbid (Yes/No): Yes light brown - cloudy	
Sample Filtered: metals sampled with pressure bailer and filter	
Reviewed by: Robt W Graves.	
Form Complete (Yes/No): Yes	Decon. Complete (Yes/No): Yes

Monitoring Well Development Forms

1995

Background Drum # 110

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: BG MW2	Project No.: 724617
Sample Start Date: 8-22-95	Time:	Well No./Field Sample No.: BGMW2	
Installation: WANG		Log Book Ref. No.:	Page No.:
Contractor: Parsons ES		Sampler (s)	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: mph	Precipitation	Air Temperature: °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC): 17.17	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method Bailing	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft)		No. Purge volumes:

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (°F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	0900	–	9.73	65.3	NA	NA	>500
Development/ Purge Cycle	0935	5	11.23	NA	NA	NA	>500
	1008	13.5	11.61	NA	NA	NA	>500
	1033	21.00	9.65	65.1	1274	7.05	>200
	1042	25.00	10.87	60.3	1078	~~7.04~~ 7.03	>200
	11:05	29.00	11.18	60.2	1044	7.03	>50
Sample							

Sample ID:	Sample Equipment Decontamination Date/Time:
Comments:	

Prepared by: [signature]	Date: 8-22-95	Reviewed By:	Date:

5/27/95MWSMPLOG.XLS

Drum # 111

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: 31MW2	Project No.: 724017
Sample Start Date: 8-22-95	Time:	Well No./Field Sample No. 31MW2	
Installation: WANG		Log Book Ref. No.:	Page No.:
Contractor: Parsons ES		Sampler (s)	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: 10 mph	Precipitation	Air Temperature: 85 °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water 6.02	Product Thickness
Depth to Water (BTOC): 6.07	Depth of Well (BTOC): 13.95	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled) yes #111
Type:		Drum Number 111
Purge Method	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 7.88x		No. Purge volumes:

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1315	0	6.07	69.6	2330	8.14	>1000
Development/	1333	5	8.78	64.7	2400	8.24	>1000
Purge Cycle	1344	10	8.79	64.5	2560	8.20	>500
	1354	14.5	8.52	62.7	2760	8.15	>500
	1403	20	8.15	61.4	2560	8.21	<200
Sample							

Sample ID:	Sample Equipment Decontamination Date/Time:
Comments:	
Prepared by: RW Jones Date: 8-22-95	Reviewed By: Date:

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Drum # 112

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: 52 MW2	Project No.: 724017
Sample Start Date: 8-22-95	Time:	Well No./Field Sample No.: MW2	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor: Parsons ES		Sampler (s)	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: 10+ mph	Precipitation NA	Air Temperature: 90 °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC): 4.96	Depth of Well (BTOC): 14.58	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer -		Purged water (drummed/labeled) yes
Type: Teflon		Drum Number 112
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft)		No. Purge volumes:

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1500	0.2	4.96	63.3	950	7.54	
	1512	5.0	7.93	61.5	850	8.05	
Development/ Purge Cycle	1519	10	6.05	61.4	820	8.04	
	1526	15	5.95	60.9	1010	7.83	
	1537	20	8.45	59.8	1100	7.75	
	1546	25	8.71	60.2	1140	7.43	
Sample							

Sample ID:	Sample Equipment Decontamination Date/Time:
Comments:	
Prepared by: [signature] Date: 8-22-95	Reviewed By: Date:

5/27/95MWSMPLOG.XLS

Drum # 104

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: 56 MW4	Project No.: 724017
Sample Start Date:	Time:	Well No./Field Sample No.: MW4	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor: Parsons ES		Sampler (s)	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: Hot mph <10	Precipitation	Air Temperature: °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness NA
Depth to Water (BTOC): 4'9"	Depth of Well (BTOC): 13.5'	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 7.7 x .163 = 1.25 gallons		No. Purge volumes: 5 = 6.25 gals.

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1540	18	6' 7"	NA	NA	NA	7500
Development/ Purge Cycle							
Sample							

Sample ID:	Sample Equipment Decontamination Date/Time:
Comments:	

Prepared by: [signature] Date: 8-21-95 Reviewed By: Date:

5/27/95MWSMPLOG.XLS

Drum # 105

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: SG MW5 Project No.: 722617
Sample Start Date: 8-21-95 Time: 1758	Well No./Field Sample No.: MW5
Installation: UANG	Log Book Ref. No.: Page No.:
Contractor: Parsons Engineering Sci	Sampler (s)
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS): feet
Top of Screen (BGS): feet	Bottom of Screen (BGS): feet
Inside Casing Diameter: inches	Borehole Diameter Inches
Well Labeled (Yes/No)	Outside Casing Diameter Inches
Well Secure (Yes/No)	Comments:

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: mph	Precipitation	Air Temperature: °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC): 7.02	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 6.2 x .163 = 1.011 x 5 = 5.055		No. Purge volumes: 5

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1820	0.25	7.02	6.82	4210	8.06	
Development/ Purge Cycle	1835	5.0	8.62	65.1	4274	8.22	
	1845	10.0	8.35	632	4400	8.23	
	1851	15.0	8.30	62.9	4520	8.25	
	1903	19.5	8.69	61.5	4120	7.47	
Sample							

Sample ID:	Sample Equipment Decontamination Date/Time:
Comments:	

Prepared by: [signature] Date: 8-22-95 | Reviewed By: Date:

5/27/95MWSMPLOG.XLS

Groundwater Sampling Forms

1995

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: BG	Project No.:
Sample Start Date: 8/28/95 Time: 10:30	Well No./Field Sample No.: MW01	
Installation: UANG	Log Book Ref. No.:	Page No.:
Contractor: Parsons	Sampler (s)	
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS): feet	
Top of Screen (BGS): feet	Bottom of Screen (BGS): feet	
Inside Casing Diameter: 2 inches	Borehole Diameter 8.25 Inches	
Well Labeled (Yes/No)	Outside Casing Diameter — Inches	
Well Secure (Yes/No)	Comments:	
PID Serial No.: PA930524	Reading 0.0 ppm 0	Background 0.0 ppm

Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 10-15 mph	Precipitation none	Air Temperature: 80 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 7.03	Depth of Well (BTOC): 16.25	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled) ✓
Type:		Drum Number
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 9.22 x 1.32 = 12.2 gals		No. Purge volumes: 3X = 36.5 gals
METER TYPE HYDAC		
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1053	5	7.58	68.0	1990	7.68	
Development/ Purge Cycle	1120	22	8.25	67.9	1980	7.96	
	1135	35	9.54	64.2	1960	7.82	
Sample	1600		7.06	68.1	2190	7.48	

Sample ID: UANG-BG-MW01_GW2 | Sample Equipment Decontamination Date/Time: 8/28/95

Comments:

Prepared by: [signature] Date: 8/28/95 | Reviewed By: | Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: BG	Project No.:
Sample Start Date: 5-25-95	Time: 1250	Well No./Field Sample No.: 56MW2	
Installation: UANG		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) DeFoote R. GRAVES	
Top of Filter Pack (BGS): —	feet	Bottom of Filter Pack (BGS): —	feet
Top of Screen (BGS): —	feet	Bottom of Screen (BGS): —	feet
Inside Casing Diameter:	2 inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): 9.83	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 10-20mph	Precipitation None	Air Temperature: 90 °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 9.83	Depth of Well (BTOC): 17.13	Depth BTOC of Pump: —
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled) Yes
Type:		Drum Number 115
Purge Method Bailer		Are parameters 20% of purge value (Y/N)
Purge Volume (Column height x gals/ft) 7.3 X 1.32 = 9.64		No. Purge volumes: 3 28.9

METER TYPE	HYDAC	"	"		
SERIAL NUMBERS-Conductivity: 9304		pH: 9304	Temperature: 9304		Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1255	10	12.34	59.1	720,000	7.08	—
Development/ Purge Cycle	1345	28	11.58	59.5	720,000	7.16	—
Dry							
Sample	1442		9.85	60.1	720,000	7.03	

Sample ID: UANG BG92-MW02-GW Sample Equipment Decontamination Date/Time: 8/25/95 1500

Comments:

Prepared by: [signature] Date: 8/25/95 Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: S1	Project No.: 724017
Sample Start Date: 8/25/95 Time: 1530	Well No./Field Sample No.: ~~[illegible]~~ MW01	
Installation: UANG	Log Book Ref. No.:	Page No.:
Contractor:	Sampler (s)	
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS): feet	
Top of Screen (BGS): feet	Bottom of Screen (BGS): feet	
Inside Casing Diameter: 2 inches	Borehole Diameter 8.25 Inches	
Well Labeled (Yes/No)	Outside Casing Diameter — Inches	
Well Secure (Yes/No)	Comments:	

PID Serial No.: PA930524	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): ~~[illegible]~~	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-10 mph	Precipitation None	Air Temperature: °F
Water Level Measurement:	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC): ~~[illegible]~~ 5.71	Depth of Well (BTOC): 16.79 ~~[illegible]~~	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled) ✓
Type: Teflon		Drum Number PES 115
Purge Method	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 10.08 x 1.32 = 13.30		No. Purge volumes: x3 = 39.91

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (°F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1553	5.0	6.39	64.5	1930	9.03	
Development/ Purge Cycle	1640	40.0	6.85	65.5	~~10,940~~ 1940	8.88	
Sample	1740		5.81	67.7	1960	8.85	

Sample ID: UANG-S1-MW01-GW2	Sample Equipment Decontamination Date/Time: 8/25/95 1800
Comments:	
Prepared by: [signature] Date: 8/25/95	Reviewed By: Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S1	Project No.:
Sample Start Date: 8/25/95	Time: 1515	Well No./Field Sample No.: MW02	
Installation: UAUG		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote R. GRAVES	
Top of Filter Pack (BGS): —	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): —	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No) No		Outside Casing Diameter —	Inches
Well Secure (Yes/No) No		Comments:	

PID Serial No.: PA930524	Reading 7.3 ppm	Background 0.0 ppm
Original SWL (BTOC): 6.18	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-15 mph	Precipitation None	Air Temperature: 89 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 6.18	Depth of Well (BTOC): 13.85	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled) ✓
Type:		Drum Number AES 111
Purge Method Bailer		Are parameters 20% of purge value? (Y/N) Y
Purge Volume (Column height x gals/ft) 7.67' x 1.32 10.1		No. Purge volumes: 3X = 30.4

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1550	5.0	7.15	62.2	3080	8.11	
Development/ Purge Cycle	1615	30.0	7.00	62.2	2250	8.03	
Sample	1715	—	7.05	64.0	2310	7.99	

Sample ID: UAUG-S1-MW01-GW02	Sample Equipment Decontamination Date/Time: 8/25/95 1730

Comments:

Prepared by: Paul A Foote	Date: 8/25/95	Reviewed By:	Date:

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PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: 52	Project No.: 724617
Sample Start Date: 8/28/95 Time: 0940	Well No./Field Sample No.: MW01	
Installation: UAAG	Log Book Ref. No.:	Page No.:
Contractor: Parsons	Sampler (s)	
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter: 2 inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No)	Outside Casing Diameter	Inches
Well Secure (Yes/No)	Comments:	

PID Serial No.: PA930524	Reading 31.2 ppm	Background 0.0 ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-15 mph	Precipitation None	Air Temperature: 80 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness
Depth to Water (BTOC): 4.82	Depth of Well (BTOC): 16.70	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled) ✓
Type:		Drum Number PES 116
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 11.88 x 1.32 = 15.7		No. Purge volumes: 3 X = 47 gals

METER TYPE	Hydac	"	"	
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304		Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1000	5	8.60	64.5	5050	8.37	
Development/ Purge Cycle	1010	10	12.85	59.9	4620	8.59	
	Bailed Dry						
Sample	1420		4.83	69.4	2720	8.71	

Sample ID: UAAG-52-MW01-GW2 Sample Equipment Decontamination Date/Time:

Comments: UAAG-52-MW01-GW2 (MS/MSD)

Prepared by: [signature] Date: 8/28/98 Reviewed By: Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S2	Project No.: 724Ø17
Sample Start Date: 8/28/95	Time:	Well No./Field Sample No.: MWØ2	
Installation: UANG		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons		Sampler (s)	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: 04930254	Reading 30.8 ppm	Background 0.0 ppm
Original SWL (BTOC):	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 0-5 mph	Precipitation None	Air Temperature: 78 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 4.57	Depth of Well (BTOC): 14.37	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled) ✓
Type:		Drum Number PES #4
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 9.8 x 1.32 = 12.9		No. Purge volumes: 3x = 39

METER TYPE

SERIAL NUMBERS-Conductivity: | pH: | Temperature: | Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	0910	5	5.65	63.0	9110	7.31	
Development/ Purge Cycle	0925	15	13.37	62.5	10,110	7.47	
	Bailed Dry						
Sample	1320		4.66	62.5	10,050	7.52	

Sample ID: UANG-S2-MW02-GW2 | Sample Equipment Decontamination Date/Time: 8/28/95 1400

Comments: Dup # UANG S2-MW03-GW2

Prepared by: [signature] | Date: | Reviewed By: | Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S3	Project No.: 724617
Sample Start Date: 8/25/95	Time:	Well No./Field Sample No.: MW01	
Installation: UANG		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote R. Graves	
Top of Filter Pack (BGS): —	feet	Bottom of Filter Pack (BGS): —	feet
Top of Screen (BGS): —	feet	Bottom of Screen (BGS): —	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No)		Outside Casing Diameter —	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 1.5 ppm	Background 0.5 ppm
Original SWL (BTOC): 7.25	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 10-20 mph	Precipitation None	Air Temperature: 76°F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 7.25	Depth of Well (BTOC): 19.15	Depth BTOC of Pump: —
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 11.9' x 1.32 = 15.7		No. Purge volumes: 3 x = 48 gal

METER TYPE Hydac	"	"	
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	0915	7.0	7.35	62.6	6830	6.71	—
Development/	0940	22.0	7.35	61.8	12,219	6.90	
Purge Cycle	1010	50.0	7.15	60.8	720,000	7.32	
Sample	1115		7.32	60.8	5530	7.37	

Sample ID: UANG-S3-MW01-GW2 | Sample Equipment Decontamination Date/Time: 8/25/95 1145

Comments:

Prepared by: [signature] Date: 8/26/95 | Reviewed By: | Date:

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PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: 53	Project No.: 724017
Sample Start Date: 8/25/95	Time:	Well No./Field Sample No.: MW02	
Installation: UANG		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote R Graves	
Top of Filter Pack (BGS): —	feet	Bottom of Filter Pack (BGS): —	feet
Top of Screen (BGS): —	feet	Bottom of Screen (BGS): —	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No)		Outside Casing Diameter —	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930524	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): 10.61	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-10 mph	Precipitation None	Air Temperature: 80 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC):	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC): 10.61	Depth of Well (BTOC): 22.92	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 12.31 X 1.32 = 16.25		No. Purge volumes: X3 = 48.75

METER TYPE HYDAC	"	"	
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1010	5	11.04	62.9	10,040	7.07	
Development/ Purge Cycle	1035	20	10.65	60.1	11,040	7.29	
	1105	50	10.65	60.1	11,460	7.23	
Sample	1200		10.62	64.4	9840	7.24	

Sample ID: UANG-53-MW02-GW2	Sample Equipment Decontamination Date/Time: 8/25/95 1235
Comments:	
Prepared by: [signature] Date:	Reviewed By: Date:

5/27/95MWGMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: S4	Project No.: 724017
Sample Start Date: 8/21/95 Time: 1625	Well No./Field Sample No.: MW1	
Installation: Utah ANG Base	Log Book Ref. No.: 3	Page No.: 10
Contractor: Parsons ES	Sampler (s) P. Foote	
Top of Filter Pack (BGS): — feet	Bottom of Filter Pack (BGS): — feet	
Top of Screen (BGS): — feet	Bottom of Screen (BGS): — feet	
Inside Casing Diameter: 2 inches	Borehole Diameter 8.25 Inches	
Well Labeled (Yes/No)	Outside Casing Diameter — Inches	
Well Secure (Yes/No)	Comments: Marker is Covered by Asphault No lock	

PID Serial No.: PA930254	Reading 4.4 ppm	Background 0.0 ppm
Original SWL (BTOC): 5.75'	Final SWL (BTOC):	Screened Interval —
Weather-wind: MC 5-10mph	Precipitation None	Air Temperature: 92 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: None
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 5.75'	Depth of Well (BTOC): 16.72	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number 108
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 11.0 x 0.163 = 1.8 gal		No. Purge volumes: 3 = 6 gal
METER TYPE		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1640		5.75	69.0	516	7.70	—
Development/	1645	3	6.71	69.0	529	7.70	
Purge Cycle	1654	6	10.90	65.4	743	7.70	—
8-22-95 Sample	1220		5.64	65.8	738	7.70	

Sample ID: UANG-S4-MW01-GW2	Sample Equipment Decontamination Date/Time: 8/22/95 1245
Comments:	

Prepared by: [illegible] Date: 9/22/95 Reviewed By: Date:

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PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: SS Project No.: 724017
Sample Start Date: 8/21/95 Time: 1725	Well No./Field Sample No.: MW01
Installation: Utah ANG Base	Log Book Ref. No.: 3 Page No.: 10
Contractor: Parsons ES	Sampler (s) P. Foote
Top of Filter Pack (BGS): — feet	Bottom of Filter Pack (BGS): — feet
Top of Screen (BGS): — feet	Bottom of Screen (BGS): — feet
Inside Casing Diameter: 2 inches	Borehole Diameter 8.25 Inches
Well Labeled (Yes/No)	Outside Casing Diameter — Inches
Well Secure (Yes/No)	Comments:

PID Serial No.: PA 930254	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): 8.58	Final SWL (BTOC):	Screened Interval —
Weather-wind: MC 5-15mph	Precipitation None	Air Temperature: 89 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: none
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 8.58	Depth of Well (BTOC): 19.28	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number 109
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 11.0 X 0.163 = 1.8 gal.		No. Purge volumes: 3 X = 6.0 gal

METER TYPE			
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1730		8.58	65.9	8,250	7.23	
Development/ Purge Cycle	1735	3	8.60	58.5	9,600	7.38	
	1745	6	8.79	58.7	9,660	7.23	
8/22/95 Sample	1330		8.44	59.2	9,640	7.23	

Sample ID: UANG-SS-MW01-GW2-	Sample Equipment Decontamination Date/Time: 8/22/95 1355
Comments: DUP UANG-SS-MW02-GW2 (1430)	
Prepared by: [signature] Date:	Reviewed By: Date:

5-27-95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S6	Project No.: 724017
Sample Start Date: 8/24/95	Time:	Well No./Field Sample No.: MW01	
Installation: Utah ANG Base		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter: 2	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 10.8 ppm	Background 0.0 ppm
Original SWL (BTOC): 8.15	Final SWL (BTOC):	Screened Interval
Weather-wind: NE 5-15 mph	Precipitation None	Air Temperature: 74 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: Mild H2S odor
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 8.15	Depth of Well (BTOC): 15.79	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 7.64 x 0.163 = 1.16 gal		No. Purge volumes: 3 — 5 gal

METER TYPE	HYDAC	"	"	
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity: —	

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1010	5	9.25	68.4	16,840	8.08	—
Development/ Purge Cycle	1017	10		67.5	16,610	8.09	
	1027	17	8.05	68.0	720K	8.11	
	1044	30	6.85	67.5	16,350	8.06	
Sample	1105	30	6.85	67.5	16,350	8.06	

Sample ID: UANG-S6-MW01-GW1 Sample Equipment Decontamination Date/Time: 8/24/95 11:55

Comments: MS/MSD

Prepared by: Paul Foote Date: 8/24/95 Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S6	Project No.: 724017
Sample Start Date: 8/24/95	Time:	Well No./Field Sample No.: MWØ2	
Installation: Utah ANG Base		Log Book Ref. No.:	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter: 2	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): 7.62	Final SWL (BTOC):	Screened Interval
Weather-wind: NC 5/15 mph	Precipitation None	Air Temperature: 78 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 7.62	Depth of Well (BTOC): 16.69	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 9.07 X 1.32 = 12 gal		No. Purge volumes: 3 = 36

METER TYPE	HYDAC	"	"	
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304		Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1320	10	13.35	64.3	13450	8.61	—
Development/ Purge Cycle							
Sample	1347	10	8.65	68.2	13460	8.94	

Sample ID: UANG-S6-MWØ2-GWØ2 Sample Equipment Decontamination Date/Time: 8/24/95 1430

Comments:

Prepared by: P. Foote Date: 8/24/95 Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S-6	Project No.: 724017
Sample Start Date: 8/24/95	Time: 1435	Well No./Field Sample No.: MW03	
Installation: Utah ANG Base		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) D. Foote	
Top of Filter Pack (BGS): — feet		Bottom of Filter Pack (BGS): — feet	
Top of Screen (BGS): — feet		Bottom of Screen (BGS): — feet	
Inside Casing Diameter: 2 inches		Borehole Diameter 8.25 Inches	
Well Labeled (Yes/No)		Outside Casing Diameter — Inches	
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): 11.09	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 10-20 mph	Precipitation None	Air Temperature: 92°F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC): —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 11.09	Depth of Well (BTOC): 19.65	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type:		Drum Number
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 8.56' x 1.32 = 11.3		No. Purge volumes: 3 x = 34 gal
METER TYPE HYDAC	"	"
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304 — Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1450	5	11.09	58.6	4650	7.89	—
Development/ Purge Cycle	1505	12	16.05	63.8	6170	7.56	—
	1517	15	16.58	63.4	6050	7.56	
Sample	1640	15	11.11	63.4	6050	7.56	—

Sample ID: UANG-SL-MW03-GW	Sample Equipment Decontamination Date/Time: 8/24/95
Comments:	
Prepared by: D. Foote Date: 8/24/95	Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: SL	Project No.:
Sample Start Date: 8/24/95	Time:	Well No./Field Sample No.: MW 04	
Installation:		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s)	
Top of Filter Pack (BGS): —	feet	Bottom of Filter Pack (BGS): —	feet
Top of Screen (BGS): —	feet	Bottom of Screen (BGS): —	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 8.25	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 0.0 ppm	Background 0.0 ppm
Original SWL (BTOC): 5.97	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-10mph	Precipitation None	Air Temperature: 88 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 5.97	Depth of Well (BTOC): 14.58	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type: Pressure		Drum Number
Purge Method bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 8.61 X 1.32 = 11.4		No. Purge volumes: 3 = 34
METER TYPE		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial							
Development/ Purge Cycle	1820	5.0	12.86	62.4	14,470	8.30	
	Bailed dry						
Sample	1836	5.2	7.78	64.6	14,590	8.29	

Sample ID: UAAG-SL-MW04-GW2 | Sample Equipment Decontamination Date/Time: 8/24/95 1905

Comments:

Prepared by: Paul Abbott Date: 8/24/95 | Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S6	Project No.:
Sample Start Date: 8/24/95	Time: 1715	Well No./Field Sample No.: MW05	
Installation:		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s)	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading 5.4 ppm	Background 0.0 ppm
Original SWL (BTOC): 7.04	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-15 mph	Precipitation None	Air Temperature: 90° F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 7.04	Depth of Well (BTOC): 13.92	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) Bailer		Purged water (drummed/labeled)
Type: Pressure		Drum Number
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 6.52 x 1.32 = 8.6		No. Purge volumes: 3 x 24 gal
METER TYPE Hydac		
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial							
Development/							
Purge Cycle	1728	2.50	9.25	62.3	9430	8.25	
	1755	24.0	9.82	62.8	9620	8.15	
Sample	1918	24.0	7.02	62.5	9570	8.15	

Sample ID: UANG-S6-MW05-GW2	Sample Equipment Decontamination Date/Time: 8/24/95 1930

Comments:

Prepared by: [signature] Date: Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S7	Project No.: 724017
Sample Start Date: 8/21/95	Time: 1530	Well No./Field Sample No.: MW1	
Installation: Utah ANG Base		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter:	2 inches	Borehole Diameter 8.5	Inches
Well Labeled (Yes/No)		Outside Casing Diameter —	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA930254	Reading 3.8 ppm	Background 0.0 ppm
Original SWL (BTOC): 6.35	Final SWL (BTOC):	Screened Interval
Weather-wind: PC 5-15 mph	Precipitation None	Air Temperature: 92 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 6.35	Depth of Well (BTOC): 16.68	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number 107
Purge Method Bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 10.33' X 0.163	1.60	No. Purge volumes: 3 = 5 gallons
METER TYPE Hydac		
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1545	1	6.35	64.7	1,770	7.69	
Development/ Purge Cycle	1550	3	11.40	64.8	1,870	7.69	
	1557	5	11.25	63.4	1,790	7.82	
8/22/95 Sample	1120		6.22	63.6	1,780	7.80	

Sample ID: UANG S7 MW01 GW1	Sample Equipment Decontamination Date/Time: 8/22/95 11:40
Comments:	
Prepared by: [signature] Date: 8/21/95	Reviewed By: Date:

5/27/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: S7	Project No.: 724017
Sample Start Date: 8/21/95	Time: 1400	Well No./Field Sample No.: MW2	
Installation: Utah ANG Base		Log Book Ref. No.: 3	Page No.:
Contractor: Parsons ES		Sampler (s) P. Foote	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS):	feet	Bottom of Screen (BGS):	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 8.5	Inches
Well Labeled (Yes/No)		Outside Casing Diameter —	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.: PA 930254	Reading 4.7 ppm	Background 0.0 ppm
Original SWL (BTOC): 6.89	Final SWL (BTOC): 6.67	Screened Interval
Weather-wind: PC 5-10 mph	Precipitation None	Air Temperature: 88 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: —
Depth to Product (BTOC) : —	Depth to Interface/Water —	Product Thickness —
Depth to Water (BTOC): 6.89'	Depth of Well (BTOC): 16.45'	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type:		Drum Number 106
Purge Method Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 9.6' x 0.69 = 5 gallons		No. Purge volumes: 3

METER TYPE	H/DAC	—	—
SERIAL NUMBERS-Conductivity: 9304	pH: 9304	Temperature: 9304	Turbidity: —

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1435	1	6.89	72.0	3,050	7.75	
Development/ Purge Cycle	1450	10	6.90	68.8	2,600	7.65	
	1455	15	6.90	69.0	2650	7.95	
8/22/95 Sample	0915		6.67	69.0	2670	7.85	

Sample ID: UANG-S7-MW02-W1

Sample Equipment Decontamination Date/Time: 8/22/95 10:30

Comments:

Prepared by: [signature] Date: 8/22/95

Reviewed By: Date:

5/27/95MWSMPLOG.XLS

Groundwater Sampling Forms

1995 Resampling

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: Site 1 Project No.: 724017
Sample Start Date: 11/6/95 Time: 1245	Well No./Field Sample No.: MW1
Installation: WANG	Log Book Ref. No.: Page No.:
Contractor:	Sampler (s) TM Jensen
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS): feet
Top of Screen (BGS): 5.35 feet	Bottom of Screen (BGS): 15.35 feet
Inside Casing Diameter: 2 inches	Borehole Diameter Inches
Well Labeled (Yes/No)	Outside Casing Diameter Inches
Well Secure (Yes/No)	Comments:

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 6.78	Final SWL (BTOC): 6.89	Screened Interval
Weather-wind: mph	Precipitation none, threatening	Air Temperature: 52 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type: Teflon 1.5 liter		Drum Number 115
Purge Method bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 15 - 6.78 x .163 = 1.34 gal		No. Purge volumes: 3 to 5
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1300	—	6.78	63	3,020	9.29	
Development/ Purge Cycle							
		5 gal		64.5	2,920	9.40	
		"		64.4	2,940	9.40	
		"		64.4	2,940	9.40	
Sample	1320		6.89				

Sample ID: WANG-S1-MW1-GW2 | Sample Equipment Decontamination Date/Time:

Comments: sediment free, amber color, more clear after purging
resampled for VOCs only

Prepared by: TM Jensen Date: Nov 6, 1995 | Reviewed By: Date:

11/6/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: Site 1	Project No.:
Sample Start Date: 11/6/95	Time: 1400	Well No./Field Sample No.: MW2	
Installation: WANG		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s) TM Jensen	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): 4	feet	Bottom of Screen (BGS): 14	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments: Cap on well not secure	
PID Serial No.:	Reading ppm	Background	ppm

Original SWL (BTOC): 6.95	Final SWL (BTOC): 7.07	Screened Interval
Weather-wind: mph	Precipitation none, overcast	Air Temperature: 50 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type: Teflon		Drum Number 111
Purge Method SAA	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 14 - 6.95 x .163 = 1.15		No. Purge volumes: 3+5
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1400	—	6.95	60.4	3,510	8.46	
Development/ Purge Cycle		5 gal	—	61.5	3,600	8.45	
				61.9	3,480 ~~3,480~~ TMJ	8.48	
				62.0	3,540	8.48	
Sample	1410	–	7.07	—	–	—	

Sample ID: WANG-S1-MW2-GW2	Sample Equipment Decontamination Date/Time:

Comments: water amber, but relatively free of sediment, clearer after purging

resampled for VOCs only

Prepared by: TM Jensen Date: Nov 6, 1995	Reviewed By: Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: Site 2	Project No.: 724017
Sample Start Date: 1600 6 Nov 95	Time: 1600	Well No./Field Sample No.: MW1	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s) TM Jensen	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): 4	feet	Bottom of Screen (BGS): 14	feet
Inside Casing Diameter: 2	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 6.15	Final SWL (BTOC): 5.85	Screened Interval
Weather-wind: calm mph	Precipitation none	Air Temperature: 50 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type: Teflon		Drum Number 116
Purge Method SAA	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 15 - 6.15 X .163 = 1.44		No. Purge volumes: 3 to 5
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1605		6.15	59.4	10,810	8.51	
Development/ Purge Cycle		Did not take 3 successive measurements to avoid contact w/ water that may be contaminated with chlorinated solvents purged 5 gal					
Sample	1630		5.55				

Sample ID: UANG - S2 - MW1 - GW2	Sample Equipment Decontamination Date/Time:

Comments: Well is contaminated based on Aug 95 sampling resampled for VOCs only

Prepared by: TM Jensen	Date: 6 Nov 1995	Reviewed By:	Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: Site 2	Project No.: 724017
Sample Start Date: 1500 Nov 6, 1995	Time: 1500	Well No./Field Sample No.: MW2	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s) TM Jensen	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): 4	feet	Bottom of Screen (BGS): 14	feet
Inside Casing Diameter: 2	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 6.68	Final SWL (BTOC): 6.80	Screened Interval
Weather-wind: calm mph	Precipitation none	Air Temperature: 50 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer)		Purged water (drummed/labeled)
Type: Teflon		Drum Number 112
Purge Method SAA	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 14 - 6.68 X .163 = 1.19		No. Purge volumes: 3 to 5
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1512	—	6.68	57.4	1,351	8.0	
Development/ Purge Cycle		5 gal		58.4	1,160	8.05	
				58.7	1,157	8.01	
Sample	1530		6.80				

Sample ID: UANG-S2-MW2-GW2 | Sample Equipment Decontamination Date/Time:

Comments: collected duplicate UANG-S2-MW3-GW2 for VOCs only

water cloudy, not much sediment

Prepared by: TM Jensen Date: Nov 6, 1995 | Reviewed By: Date:

11/6/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: Site 3 Project No.: 724017
Sample Start Date: 7 Nov 95 Time: 1000	Well No./Field Sample No.: MW 1
Installation: UANG	Log Book Ref. No.: Page No.:
Contractor:	Sampler (s) TM Jensen
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS): feet
Top of Screen (BGS): 4 feet	Bottom of Screen (BGS): 14 feet
Inside Casing Diameter: 2 inches	Borehole Diameter Inches
Well Labeled (Yes/No)	Outside Casing Diameter Inches
Well Secure (Yes/No)	Comments:

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 7.78	Final SWL (BTOC): 7.77	Screened Interval
Weather-wind: mph	Precipitation none	Air Temperature: 48 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) ~~pressure bailer w/ filter~~ TMJ		Purged water (drummed/labeled)
Type: ~~700 cm^2 Norwell filter~~ TMJ Teflon bailer		Drum Number 113
Purge Method Teflon Bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 17.13 − 7.78 X .163 = 1.52 gal		No. Purge volumes: 3 ~~gal~~ 5
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1010		7.78	59.7	7,960	7.32	
Development/ Purge Cycle		5 gal		61.0	12,300	7.5	
				61.5	14,500	7.53	
Sample	1045		7.77	61.4	12,350	7.61	

Sample ID: UANG-S3-MW1-GW2 | Sample Equipment Decontamination Date/Time:

Comments: water darker colored gray, bubbly in 5 gal bucket
re sampled for VOCs only

Prepared by: TM Jensen Date: 11/7/95 | Reviewed By: Date:

11/6/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: Site 6	Project No.: 724617
Sample Start Date: 11/8/95	Time: 0900	Well No./Field Sample No.: MW1	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s) TM Jenson	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): 5.24	feet	Bottom of Screen (BGS): 15.24	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 10 1/4	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 6.52	Final SWL (BTOC): 6.57	Screened Interval
Weather-wind: calm mph	Precipitation none	Air Temperature: 50 °F
Water Level Measurement: solinst	Serial No.: 13327	Odor: sulfur smell
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) pressure bailer w/ filter		Purged water (drummed/labeled)
Type: 700 cm² filter, vacuum pump		Drum Number
Purge Method Teflon bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 15 - 6.52 x .163 = 1.42		No. Purge volumes: 3.5
METER TYPE Hydac 910		
SERIAL NUMBERS Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	ORP(mV) ~~Turbidity (NTU)~~
Initial	0945		6.52	65.4	< 20,000	7.84	
Development/ Purge Cycle		5 gal		67.4	17,960	8.29	
				68.1	19,990	8.30	
Sample	1015			68.1	19,980	8.30	- 220

Sample ID: UANG-S6-MW1-GW2 | Sample Equipment Decontamination Date/Time:

Comments: water has sulfur smell and is cloudy, dk. gray

Sampled for arsenic only (filtered)

Prepared by: TM Jenson Date: 8 Nov 1995 | Reviewed By: | Date:

11/6/95MWSMPLOG.XLS

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: Site 6	Project No.: 724017
Sample Start Date: 11/8/95	Time: 1300	Well No./Field Sample No.: MW2	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s) TM Jensen	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): 5.26	feet	Bottom of Screen (BGS): 15.26	feet
Inside Casing Diameter: 2	inches	Borehole Diameter 10 1/4	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 8.10	Final SWL (BTOC): 8.15	Screened Interval
Weather-wind: SW mph 5	Precipitation none	Air Temperature: 60 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) pressure bailer w/ filter		Purged water (drummed/labeled)
Type: 700 cm² Norwell filter		Drum Number
Purge Method Teflon bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 15.26 - 8.10 X .163 = 1.17		No. Purge volumes: 3.65
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1200		8.10	66.0	15,170	8.68	
Development/ Purge Cycle		5 gal		66.6	14,520	8.69	
				59.8	14,100	8.67	
Sample	1345		8.15	66.0	14,400	8.68	

Sample ID:	Sample Equipment Decontamination Date/Time:

Comments: resample for arsenic (filtered)

water color brown, free of sediment

Prepared by: TM Jensen	Date: 8 Nov. 1995	Reviewed By:	Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM	Sample Site I.D.: Site 6 Project No.: 724017
Sample Start Date: 11/8/95 Time: 1400	Well No./Field Sample No.: MW3
Installation: UANG	Log Book Ref. No.: Page No.:
Contractor:	Sampler (s) TM Jensen
Top of Filter Pack (BGS): feet	Bottom of Filter Pack (BGS): feet
Top of Screen (BGS): 4.75 feet	Bottom of Screen (BGS): 14.75 feet
Inside Casing Diameter: 2 inches	Borehole Diameter 10 1/4 Inches
Well Labeled (Yes/No)	Outside Casing Diameter Inches
Well Secure (Yes/No)	Comments:

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 11.38	Final SWL (BTOC): 11.39	Screened Interval
Weather-wind: calm mph	Precipitation none, clear	Air Temperature: 60 °F
Water Level Measurement: Solinst	Serial No.: 13327	Odor: none
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) pressure bailer w/ filter		Purged water (drummed/labeled)
Type: 700 cm² Barwell filter		Drum Number
Purge Method teflon bailer	Are parameters 20% of purge value? (Y/N)	
Purge Volume (Column height x gals/ft) 17.15 − 11.38 x .163 = 0.94		No. Purge volumes: 3 to 5

METER TYPE Hydac	910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature:	Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial		1400	11.38	64.7	6,200	7.53	
Development/ Purge Cycle		5 gal		63.4	6,230	7.60	
				62.9	6,270	7.44	
Sample		1445	11.39	62.7	6,300	7.42	

Sample ID: UANG-S6-MW3-GW2	Sample Equipment Decontamination Date/Time:

Comments: Resample for arsenic (filtered)

Water brown

Prepared by: TM Jensen Date: 8 Nov 1995	Reviewed By: Date:

PARSONS ENGINEERING SCIENCE, INC.

GW PURGING/SAMPLING/DEVELOPMENT FORM		Sample Site I.D.: Site 6	Project No.:
Sample Start Date: 11/8/95	Time: 1040	Well No./Field Sample No.: MW4	
Installation: UANG		Log Book Ref. No.:	Page No.:
Contractor:		Sampler (s) TM Jensen	
Top of Filter Pack (BGS):	feet	Bottom of Filter Pack (BGS):	feet
Top of Screen (BGS): 4	feet	Bottom of Screen (BGS): 14	feet
Inside Casing Diameter:	inches	Borehole Diameter	Inches
Well Labeled (Yes/No)		Outside Casing Diameter	Inches
Well Secure (Yes/No)		Comments:	

PID Serial No.:	Reading ppm	Background ppm
Original SWL (BTOC): 6.20	Final SWL (BTOC): 6.30	Screened Interval
Weather-wind: mph	Precipitation none	Air Temperature: 58 °F
Water Level Measurement: calm	Serial No.:	Odor:
Depth to Product (BTOC) :	Depth to Interface/Water	Product Thickness
Depth to Water (BTOC):	Depth of Well (BTOC):	Depth BTOC of Pump:
Sampling Method (Pump or Bailer) pressure w/ filter		Purged water (drummed/labeled)
Type: 700 cm² filter – Norwell		Drum Number
Purge Method teflon bailer		Are parameters 20% of purge value? (Y/N)
Purge Volume (Column height x gals/ft) 14 – 6.20 x .163 = 1.27		No. Purge volumes: 3 to 5
METER TYPE Hydac 910		
SERIAL NUMBERS-Conductivity:	pH:	Temperature: / Turbidity:

Description	Time	Volume Purged (Gallons)	Water Level (ft. BTOC)	Temp (° F)	Conductivity umhos/cm	pH (s.u.)	Turbidity (NTU)
Initial	1040		6.20	61.7	17,150	8.52	
Development/ Purge Cycle		5 gal		61.4	16,270	8.48	
				61.0	13,500	8.39	
Sample	1115			60.9	13,680	8.41	

Sample ID: UANG S6-MW4-GW2	Sample Equipment Decontamination Date/Time:

Comments: resample for arsenic only, water fairly free of sediment filtered

Prepared by: TM Jensen	Date: 8 Nov 1995	Reviewed By: Date:

11/6/95MWSMPLOG.XLS

APPENDIX D
CHAIN-OF-CUSTODY FORMS

APPENDIX D

TABLE OF CONTENTS

Chain-of-Custody Forms

1992, 1993 and 1994

ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999

Chain-of Custody Record

PROJ. NO.: UTOH

PROJECT NAME/LOCATION: Utah Air National Guard

SAMPLERS: (Signature) Thomas M Jensen, F. H. W. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	SW8240	8270	E418.1	SW8080	PPM Metals*	REMARKS
Samp 1	10/22	1600		X	UANG-PI5 (0-2)	1-3" ring	X					
Samp 1	10/22	1600	X		UANG-PI5 (0-2)	1 500ml		X		X		
Samp 1	10/22	1600	X		UANG-PI5 (0-2)	1 500ml			X			
Samp 1	10/22	1600	X		UANG-PI5 (0-2)	1 500ml					X	Please send laboratory
Samp 2	10/22	1620		X	UANG-PI5 (6-8)	1-3" ring	X					results to Gene Wright
Samp 2	10/22	1628	X		UANG-PI5 (6-8)	1-500ml			X			ES-Salt Lake City
Samp 2	10/22	1625	X		UANG-PI5 (6-8)	1-500ml					X	PPM - priority pollutant metals (13)
Samp 2	10/22	1627	X		UANG-PI5 (6-8)	1-500ml		X		X		
												Samples in NRDC cooler

→ UANG PI5 (6-8) MS/MSD FOR VOCs, SVOCs, TRPH, PCB/PEST, METS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
F. H. W. Graves	10-22-92 / 17:45				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[signature]	10/23/92 / 0900	Temp. 6°C	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: UT014.14.01
PROJECT NAME/LOCATION: Utah Air National Guard

SAMPLERS: (Signature) Darin Burst, Robert W. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8010	8020	8270	8080	PPM	ms/msD	REMARKS
BG	1-29-93	1620		X	UANG-BG-MW1-1	12	X	X	X	X	X		
BG	1-29-93	1655		X	UANG-BG-BB-1	4	X	X					8010, 8020, and 8270 require a 100% rush. for results by Wednesday 2-3-93
BG	1-29-93	1540		X	UANG-TB-BG-1	2	X	X					Method 8080 and PPM can be done on a normal schedule
													Results should be sent to Gene A. Wright Project Manager Engineering-Science, Inc. Salt Lake City, Utah 84121

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Graves	1-29-93 / 1656	Darin Burst	Darin Burst	1-29 / 17:48	[signature]
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks HAZWRAP	

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Chain-of Custody Record

PROJ. NO.: 4T014.14.08

PROJECT NAME/LOCATION: UANG

SAMPLERS: (Signature) Thomas M Jensen, Robert W Grover

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8010/8020					REMARKS
FB9	2/12/93	1030		X	UANG FB9	3	X					samples preserved w/ HCL
CS	2/12	1600		X	UANG-CS-EQR	3	X					on ice
CS	2/12	1435		X	UANG-CS-FB10	3	X					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W Grover	2-12-93 / 1715				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: FedEx # 6288611700	

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Chain-of Custody Record

PROJ. NO.: 4T014.14.08

PROJECT NAME/LOCATION: UANG

SAMPLERS: (Signature) Thomas M Jevsa Robert W J Jaweg

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8270	8080	TPH (418.1)	PPM			REMARKS
FB9	2/12/93	1030		X	UANG FB9	7	X	X	X	X			8270 + 8080 non-preserved
CS	2/12	1600		X	UANG-CS-ERR	4	X	X	X	X			TPH preserved w/ HCL
CS	2/12	1435		X	UANG-CS-FB10	4	X	X	X	X			PPM preserved w/ HNO3
													Samples preserved on ice

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W J Jawes	02-12-93 1715				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex# 6288611710	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT014.14.03	Utah Air National Guard

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8010/8020	8270/8080	TPH/TPPM			REMARKS
CS	2-12-93	1030		X	UANG-CS1	3	X	X	X			All samples are - sediment
CS	2-12-93	1057		X	UANG-CS2	3	X	X	X			and are preserved with
CS	2-12-93	1126		X	UANG-CS3	3	X	X	X			Ice.
CS	2-12-93	1155		X	UANG-CS4	3	X	X	X			
CS	2-12-93	1415		X	UANG-CS5	3	X	X	X			
CS	2-12-93	1415		X	UANG-CS5-MS	3	X	X	X			
[illegible]	2-12-93	1415		X	UANG-CS5-MSD	3	X	X	X			
[illegible]	2-12-93	1501		X	UANG-CS6	3	X	X	X			
[illegible]	2-12-93	1523		X	UANG-CS7	3	X	X	X			

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	2-12-93 / 1723			/	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	/			/	

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
	/		/	Fed Ex # 628861170D

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT011.14.08	Utah Air National Guard

SAMPLERS: (Signature) Robert W. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	PARAMETER: 8010/8020					REMARKS
CW	2-11-93	1028		X	UANG-CW1	3	X					
CW	2-11-93	1735		X	UANG-CW2	3	X					All samples preserved with
CW	2-11-93	1426		X	UANG-CW3	3	X					HCl
CW	2-11-93	1428		X	UANG-CW3 MS	3	X					
CW	2-11-93	1428		X	UANG-CW3 MSD	3	X					
CW	2-11-93	1610		X	UANG-CW3 EAR	3	X					Please send results to
[illegible]	2-11-93	1115		X	UANG-CW4	3	X					Gene A. Wright
[illegible]	2-11-93	1532		X	UANG-FB8	3	X					P.M. - ES
[illegible]	2-11-93	0932		X	UANG-TB22	2	X					SLC UT

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Graves	2-11-93 / 1750				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Fed Ex # 6288611711

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Chain-of Custody Record

PROJ. NO.: 17010.11.08
PROJECT NAME/LOCATION: Utah Air National Guard
SAMPLERS: (Signature) Keith W Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8080	8270	TPH 418.1	PPM		REMARKS
CW1	2-11-93	1115		X	UANG-CW4	7	X	X	X	X		
CW2	2-11-93	1235		X	UANG-CW2	7	X	X	X	X		
												Please Send Results to
												Gene A. Wright
												ES - SLC w/-
												PPM - Attempt preservation w/ HNO_3
												TPH - preserved with HCl
												8080 + 8270 - preserved with Ice
												- Caution some samples may
												be hazardous

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Keith W Graves	2-11-93 / 1750				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex # 6886611711	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT714.14.08	UANG

SAMPLERS: (Signature) Thomas M [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8080	8270	TPH (418.1)	PPM			REMARKS
CW3	2/11/93	1428		X	UANG CW3	7	X	X	X	X			PPM preserved w/ ~~HCL~~ HNO3
CW3	2/11	1429		X	UANG CW3 (MS)	7	X	X	X	X			TPH preserved w/ HCL
													all samples shipped on ice

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Thomas M [illegible]	2/11/93 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Air bill # 62[illegible]8611711	

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Chain-of Custody Record

PROJ. NO.: 01?14.14.08

PROJECT NAME/LOCATION: Utah Air National Guard

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8080	8270	TPH (418.1)	PPM			REMARKS
CW3	2/11/93	1428		X	UANG CW3 (MSD)	7	X	X	X	X			
CW1	2/11/93	1028		X	UANG CW1	7	X	X	X	X			
													please send results to
													Gene A. Wright
													ES
													SLC Ut.
													(1) All PPM - filtered + preserved with HNO3
													(2) TPH preserved with HCl
													(3) 8080 + 8270 preserved with HCl

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	2/11/93 1750				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex# 6288611711	

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Chain-of Custody Record

PROJ. NO.: UTA14.14.03

PROJECT NAME/LOCATION: Utah Air National Guard

SAMPLERS: (Signature) [signature]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8270	8080	TPH	PPM		REMARKS
CW	2-11	1610		X	UANG-CW3-ERB	7	X	X	X	X		
FB	2-11-93	1532		X	UANG-FBB	7	X	X	X	X		
												Please Send Results to Gene A. Wright ES-SLC. UT.
												PPM-filtered, preserved with HNO3 TPH preserved with HCl 8080+8270 preserved with Ice

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	2-11-93 1750				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Fed Ex # 6288611711

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ENGINEERING-SCIENCE

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Chain-of-Custody Record

PROJ. NO.: UT014.14.03

PROJECT NAME/LOCATION: UANG - Site 1, Site 6

SAMPLERS: (Signature) Darien Broot   Robt W [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	SW8080	SW8240	SW8270	E418.1		Preservative	REMARKS
S1	12/11/92	1005		X	UANG-S1-SB1(0-2)	1-8oz	X					Ice	Please send results
S1	12/11/92	1015		X	UANG-S1-SB1(4-6.5)	1-8oz	X					Ice	to Gene A. Wright
S1	12/11/92	1110		X	UANG-S1-SB3(2-4)	1-8oz	X					Ice	Project Manager.
S1	12/11/92	1120		X	UANG-S1-SB3(4-6.5)	1-8oz	X					Ice	
S1	12/11/92	1115		X	UANG-S1-SB3(6.5-8.5)	1-8oz	X					Ice	
[illegible]	12/11/92	1030		X	UANG-FB1	7		X	X	X		H_2SO_4, HCl, HNO_3, Ice	
[illegible]	12/11/92	0800		X	UANG-TB8 - BROKEN	1-VOA		X				HCl/Ice	
[illegible]	12/11/92	1300		X	UANG-RB6-S1	2-1l	X					Ice	
[illegible]	12/11/92	1800		X	UANG-RB7-S6	7		X	X	X		H_2SO_4, HCL, HNO_3, Ice	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Broot	12/11/92 18:15				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: FEd Ex # 9258743911	

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ENGINEERING-SCIENCE

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • (801) 572-9069 (Fax)

Chain-of Custody Record

PROJ. NO. 724017402[illegible]

PROJECT NAME/LOCATION: UANG

SAMPLERS: *(Signature)* [illegible] [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8080						REMARKS
SITE 1	10/26	1031		X	UANG-S1-SB4 (7.5-9.5)	1	✓						Soil / Matrix, kept at < 4°C
	10/26	1015		X	UANG-S1-SB4 (3.5-5.5)	1	✓						
	10/26	1125		X	UANG-S1-SB5 (1-3)	1	✓						
	10/26	1143		X	UANG-S1-SB5 (5-7)	1	✓						
	10/26	1311		X	UANG-S1-SB6 (1-3)	1	✓						
	10/26	1323		X	UANG-S1-SB6 (3-5)	1	✓						
	10/26	1331		X	UANG-S1-SB6 (5-7)	1	✓						
	10/26	1407		X	UANG-S1-SB7 (1-3)	1	✓						
	10/26	1427		X	UANG-S1-SB7 (5-7)	1	✓						
	10/26	1524		X	UANG-S1-SB8 (1-3)	1	✓						
	10/26	1524		X	UANG-S1-SB8 MS	1	✓						
	10/26	1524		X	UANG-S1-SB8 MSD	1	✓						
	10/26	1530		X	UANG-S1-SB8 (7-9)	1	✓						
	10/26	1540		X	UANG-S1-SB8 (5-7)	1	✓						
	10/26	1632		X	UANG-S1-SB9 (3-5)	1	✓						

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[illegible]					
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

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Chain-of Custody Record

PROJ. NO. 724017740203 | PROJECT NAME/LOCATION UANG

SAMPLERS: (Signature) [signatures]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8080						REMARKS
Site 1	10/26	1652		X	UANG-S1-SB9 (5-7)	1	✓						Soil Matrix, kept at < 4°C
	10/26	1717		X	UANG-S1-SB10 (1-3)	1	✓						
	10/26	1742		X	UANG-S1-SB10 (3-5)	1	✓						
	10/26	1535		X	UANG-S1-FB3	2	✓						Water Matrix, kept at < 4°C
	10/26	1807		X	UANG-S1-RB3	2	✓						
	10/26	1810		X	UANG-S1-FB4	2	✓						

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks

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PARSONS **ENGINEERING-SCIENCE**

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Chain-of Custody Record

PROJ. NO. 724017.

PROJECT NAME/LOCATION: Utah Air National Guard - IRP

SAMPLERS: (Signature) Rolf W. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	Matrix	NO. OF CONTAINERS	TCLP Metals	TCLP VOCs				REMARKS
S-1	12-9	1448	X		S1-TCLP-129-2	Soil	2	X	X				
S-10	12-9	1417	X		S-10-TCLP-129-1	Soil	2	X	X				
													Caution - might be glass shards in S1-TCLP sample

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rolf W. Graves	12-9-94 / 1523	[signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
1/7019.14.07	Utah Air National Guard

SAMPLERS: (Signature) [signature]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010	8020	8240	8080	TPM		Preservatives	REMARKS
FB2	2-2-93	1653		X	UANG-FB5-8	9	X	X	X	X	X		HCl, HNO3, Ice	(Filtered TPM)
53	2-2-93	1747		X	UANG-53-RB6	6	X	X	X	,			HCl	
FB4	1-29-93	1444		X	UANG-FB4	4			X	X			Ice	
S1	2-1-93	1703		X	UANG-S1-MW1-3	2				X			Ice	
S1	2-1-93	1745		X	UANG-S1-RB5	2				X			Ice	
S1	2-1-93	1718		X	UANG-S1-MW2-2	2				X			Ice	
S1	2-1-93	1752		X	UANG-S1-FB2	2				X			Ice	
	2-2-93				UANG-TB-17	2	X	X						Please Submit Results to
														Gene A. Wright
														Engineering-Science Inc
														Salt Lake City Ut. 84121

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	2-2-93 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex # 2119190345	

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Chain-of Custody Record

PROJ. NO.: UT014.14.08
PROJECT NAME/LOCATION: UTANG - BG

SAMPLERS: (Signature) Darin Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8270 Semi Vol	8080 Pest	8020 + HCL	8010 + HCL	TPH + H_2SO_4	Metals + HNO_3	REMARKS
BG	1-28	13:20		X	UANG - BG - MW1 - 1	9	X	X	X	X	X	X	MS/MSD
BG	1-28	13:50		X	UANG - BG - RB1	2			X	X			
													Rush 8010, 8020 ...
													UANG - BG - MW1 - 1
													Rush 8270
													Sam... [illegible]

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darin Brost	1-28 15:04	[signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[signature]	1-28-9? 1504	HAZWRAP	

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ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999 • 801-272-6069 (Fax)

Chain-of Custody Record

PROJ. NO. VT014.14.05

PROJECT NAME/LOCATION VANG - BG

SAMPLERS: *(Signature)* DARIEN BROST

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA 8010/8020	PPM (metals)	SVOA (8270)	TPH (E418.1)	PEST (8080)		MATRIX	REMARKS
BG	1-13	12:20		X	VANG-BG-MW1 (0-2)	2	X	X	X	X	X		Soil	
BG	1-13	12:50		X	VANG-BG-MW1 (4-6)	2	X	X	X	X	X		Soil	
TB16	1-13	11:10		X	VANG-TB2 (16)	2	X						water	
														Preservative: ICE
														Please send results to:
														Gene A. Wright
														Salt Lake City UT

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Darien Brost	1-13-93 / 17:00				

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
				FED Ex: #9256743652

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ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999 • 801-272-6069 (Fax)

Chain-of-Custody Record

PROJ. NO.: UT014.19(?)

PROJECT NAME/LOCATION: UANG - Site 2

SAMPLERS: (Signature) Robert W Graves [signature]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	TPM (13 Metals)	SVOA (8270)	TPH (E418.1)			Preservatives	REMARKS
S-2	12-3-92	1130		X	UANG-S2-SB3 2.5-4.5	2	X	X	X	X			Ice	All samples are soil unless
S-2	12-3-92	1200		X	UANG-S2-SB3 4.5-6.5	2	X	X	X	X			Ice	otherwise noted.
S-2	12-3-92	1245		X	UANG-S2-SB3 6.5-8.5	2	X	X	X	X			Ice	
S-2	12-2-92	1630		X	UANG-S2-SB2 2.5-4.5	1	X						Ice	Please Send Results to
S-2	12-2-92	1630	X		UANG-S2-SB2 2.5-4.5	3		X	X	X			Ice	Gene A. Wright
[illegible]	12-2-92	1700		X	UANG-S2-SB2 4.5-6.5	1	X						Ice	Salt Lake City, Ut.
[illegible]	12-2-92	1700	X		UANG-S2-SB2 4.5-6.5	3		X	X	X			Ice	
[illegible]	12-2-92	1532		X	UANG-S2-SB1 5.0-7.5	1	X						Ice	
[illegible]	12-2-92	1532	X		UANG-S2-SB1 5.0-7.5	3		X	X	X			Ice	
[illegible]	12-2-92	1445		X	UANG-S2-SB1 .5-2.5	1	X						Ice	
S-2	12-2-92	1445	X		UANG-S2-SB1-.5-2.5	3		X	X	X			Ice	
TB2	12-2-92	0800		X	UANG TB2	1 VoA	X						(water sample) Ice + HCL	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	12-3-92 / 1837			/	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex Bill # 9258743944	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: 67014.14.08

PROJECT NAME/LOCATION: Utah Air National Guard

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010/8020	8270	PPM			REMARKS
SZ	2-10-93	1530		X	UANG-SZ-MW1	6	X	X	X			
SZ	2-10-93	1530		X	UANG-SZ-MW1-MS	6	X	X	X			Please send Results to:
SZ	2-10-93	1530		X	UANG-SZ-MW1-MSD	6	X	X	X			
UANG	2-10-93	0915		X	UANG-TB-21	2	X					Gene A. Wright
												Project Manager - UANG
												Salt Lake City - Ut
												① All 8010/8020 Samples
												preserved with HCl.
												② All PPM samples are filtered
												and preserved with HNO_3
												③ All 8270 samples are
												preserved with Ice.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	2-10-93 1655				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: 6288611722 - Fed Ex #1	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT014	UANG - Site 3 -

SAMPLERS: *(Signature)* Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	SVOA (8270)	VOA (8010/8020)	TPH (E418.1)	~~TPH (metals)~~	Matrix	Preservatives	REMARKS
S3	12/18	10:15		X	UANG-S3-RB9	[illegible] bottles	X	X	X	X	wtr		HCl, H_2SO_4 and Ice
S3	12/18/92	16:30		X	UANG-S3-SB4(6-8)	2	X	X	X	"	soil		Ice
													Please Send Results to Gene A.
													Wright - Salt Lake City UT.
													Fed Ex # 9258743885

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)* Darien Brost	Date / Time 12/18/92 19:00	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: UT014.14.03

PROJECT NAME/LOCATION: UANG site 2, site 3, site 7

SAMPLERS: (Signature) Darin Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS		VOA (8010/8020)	SVOA (8270)	TPH (E418.1)	PPM (metals)	Preservatives	REMARKS
S7	12/17	1350		X	UANG S7-SB3 (4.5-6.5)	2		X	X	X	X	Ice	~~Soil~~ All samples are soil unless
S3	12/17	1615		X	UANG S3-SB2 (4.5-6.5)	2		X	X	X		Ice	otherwise noted.
S3	12/17	1615		X	UANG S3-SB2 (4.5-6.5) MS	2		X	X	X		Ice	
S3	12/17	1615		X	UANG S3-SB2 (4.5-6.5) MSD	2		X	X	X		Ice	Please Send Results to
S3	12/17	1700		X	UANG S3-SB3 (4-6)	2		X	X	X		Ice	Gene A. Wright
S3	12/17	1710		X	UANG S3-SB3 (6-8)	2		X	X	X		Ice	Salt Lake City, Ut.
S3	12/17	1515		X	UANG S3-SB1 (4-6)	2		X	X	X		Ice	
S3	12/17	1530		X	UANG S3-SB1 (6-8)	2		X	X	X		Ice	
S2	12/17	1135		X	UANG S2-SB4 (4.5-6.5)	2		X	X	X	X	Ice	
[illegible]	12/17	1745		X	UANG TB-12	2		X				Ice + HCl (Water Sample)	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darin Brost	12/18/93 / 19:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex # 9258743885	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
47014.14.08	UANG / SLC

SAMPLERS: *(Signature)* Thomas M Jensen

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8010	8020	8270	PPM		REMARKS
52	2/2/93	1205		X	UANG - 52 - MW1 - 4	7	X	X	X	X		preserved on ice - all samples
53	2/2	1700		X	UANG - 53 - MW3 - 5	6	X	X	X			8010/8020 preserved w/ HCL
53	2/2	1600		X	UANG - 53 - MW1 - 6	6	X	X	X			8270 non-acidified
53	2/2	1715		X	UANG - 53 - MW2 - 7	6	X	X	X			PPM - preserved w/ HNO_3
												and filtered
												submit results to:
												Engineering Science, Inc.
												Gene Wright
												SLC, Utah

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Thomas M Jensen	2/2/93 1730				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				Air bill no. 2119170556	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: UT614.14.03

PROJECT NAME/LOCATION: UANG - Site 2,3, 4+7

SAMPLERS: (Signature) James F Bernard / James F Bernard

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	8010/8020	TPM	SVOA(8270)	TPH(E418.1)	[illegible]		Preservative	REMARKS
S-4	12/29/92	1400		X	UANG-S4-SB8 (0.5-2.5)	2	X	X	X	X			Ice	All samples are soil
S-4	12/29/92	1430		X	UANG-S4-SB8 (4.5-6.5)	2	X	X	X	X			Ice	unless otherwise noted
S-4	12/29/92	1527		X	UANG-S4-SB9 (2.5-4.5)	2	X	X	X	X			Ice	
S-4	12/29/92	1230		X	UANG-S4-TB 14	2	X						Hcl (water)	Please send Analytical
S-4	12/29/92	1545		X	UANG-S4-SB9 (4.5-6.5)	2	X	X	X	X			Ice	Results To:
[illegible]	12/30/92	1135		X	UANG-S7-SB9 (2.5-4.5)	2	X	X	X	X			Ice	Gene A. Wright
[illegible]	12/30/92	1205		X	UANG-S7-SB9 (8.5-9.5)	2	X	X	X	X			Ice	Salt Lake City, UT.
[illegible]	12/30/92	1140		X	UANG-S7-SB9 (4.5-6.5)	2	X	X	X	X			Ice	
[illegible]	12/30/92	1140		X	UANG-S7-SB9 (4.5-6.5) MS	2	X	X	X	X			Ice	
[illegible]	12/30/92	1140		X	UANG-S7-SB9 (4.5-6.5) MSD	2	X	X	X	X			Ice	
S-7	12/29/92	1650		X	UANG-S7-SB10 (4.5-6.5)	2	X	X	X	X			Ice	
—	12/30/92	1030		X	UANG-TB15	2	X						Hcl (water)	
S-2	12/30/92	1525		X	UANG S2-SB5-6.5-8.5	2	X	X	X	X			Ice	
S-2	12/30/92	1615		X	UANG S2-SB6-6.5-8.5	2	X	X	X	X			Ice	
S-3	12/30/92	1420		X	UANG S3-SB5 4.0-6.0	2	X	X	X	X			Ice	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
James F Bernard	12/30/92 1815				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Fed Ex Bill # 925 874 3863

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ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999 • 801-272-6069 (Fax)

Chain-of Custody Record

PROJ. NO.: 47014

PROJECT NAME/LOCATION: UANG Site 4

SAMPLERS: (Signature) Darin Burst   Thomas M Jensen

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	SVOA (8270)	PPM (metals)	TPH (E 418.1)			REMARKS
S-4	12/15	0815		X	UANG TB 10	2	X						VOA preserved w/ HCL (water)
S4	12/15	1415		X	UANG S4-SB5 (5-7)	2	X	X	X	X			SVOA, PPM, and TPH in soil
S4	12/15	1420		X	UANG S4-SB5 (7-9)	2	X	X	X	X			sample jar. VOA soil capped
S4	12/15	1646		X	UANG S4-SB8 (4.5-6.5)	2	X	X	X	X			
S4	12/15	1646		X	UANG S4-SB7 (MS) (4.5-6.5)	2	X	X	X	X			MS & MSD each have
[redacted]	12/15	1646		X	UANG S4-SB7 (MSD) (4.5-6.5)	2	X	X	X	X			Separate VOA and SVOA TPH, PPM
[redacted]	12/15	1646		X	UANG S4-SB6 (2.5-4.5)	2	X	X	X	X			
[redacted]	12/15	1500		X	UANG S4-SB6 (6.5-8.5)	2	X	X	X	X			
													Send results to Dave Wright
													SLC, Utah
													Project Manager

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Thomas M Jensen	Dec 15, 1993 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex # 9258743896	

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ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999 • 801-272-6069 (Fax)

Chain-of Custody Record

PROJ. NO.: UT014

PROJECT NAME/LOCATION: UANG - Site 4

SAMPLERS: (Signature) Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	SVOA (8270)	TPH (E 418.1)	PPM (metals)			REMARKS
Site 4	12/7/92	0950		X	UANG S4-SB2 (2.5-4.5)	2	X	X	X	X			All samples are soil samples
Site 4	12/7/92	1030		X	UANG S4-SB2 (6.5-9.0)	2	X	X	X	X			All samples preserved on ice
Site 4	12/7/92	1115		X	UANG S4-SB3 (2.5-4.5)	2	X	X	X	X			
Site 4	12/7/92	1130		X	UANG S4-SB3 (6.5-9.0)	2	X	X	X	X			
Site 4	12/7/92	1400		X	UANG S4-SB4 (2.5-4.5)	2	X	X	X	X			
Site 4	12/7/92	1426		X	UANG S4-SB4 (6.5-9.0)	2	X	X	X	X			
[redacted]	12/7/92	1446		X	UANG S4-SB4 (9.0-11.0)	2	X	X	X	X			
[redacted]	12/7/92	1[illegible]		X	UANG S5-SB1 (0-2)	2	X	X	X				
[redacted]	12/7/92	1635		X	UANG S5-SB1 (6-8)	2	X	X	X				
[redacted]													
[redacted]													

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Brost	12-7-92 / 19:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex #' 925874322	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: U7014.14.05
PROJECT NAME/LOCATION: UANG - Site 5
SAMPLERS: (Signature) Darin Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	TPH (E418.1)	SVOA (8270)	PPM	8020	8240	8010	Preservative / REMARKS
S-5	12/8/92	1230		X	UANG-RB-3-SS	4-1L	X	X	X				~~water~~ HNO$_3$, H$_2$SO$_4$, Ice
S-5	12/8/92	1230		X	UANG-RB3-SS	3-40ml				X	X	X	HCl + Ice
TB5	12/8/92	1200		X	UANG-TB5	40ml				X	X	X	HCl + Ice
													All samples are water samples
													Send results to:
													Gene Wright
													1935 Vine st
													Suite 240
													Salt Lake City, Utah 84121

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darin Brost	12-8-92 / 18:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Fed Ex Bill # 9258743915

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Chain-of Custody Record

PROJ. NO.: UTr14.14.03

PROJECT NAME/LOCATION: UANG ... I 4 Site 7

SAMPLERS: (Signature) Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	SVOA (8270)	VOA (8010/8020)	TPH (E418.1)	PPM (metals)	Matrix	Preservatives	REMARKS
55	12/16	15:10		X	UANG-55-SBC (4-6)	2	X	X	X		Soil	Ice	
55	12/16	14:14		X	UANG-55-SB5 (6-8.5)	2	X	X	X		Soil	Ice	
55	12/16	15:55		X	UANG-55-SB7 (6-8)	2	X	X	X		Soil	Ice	
57	12/16	17:00		X	UANG-57-SB7 (6-8)	2	X	X	X	X	Soil	Ice	
55	12/16	08:00		X	UANG TB11	2		X			Wtr	HCl + Ice	

Please Send Results to Gene A. Wright Salt Lake City, Ut.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Brost	12/18/92 19:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex # 9258743885	

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ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999 • 801-272-6069 (Fax)

Chain-of Custody Record

PROJ. NO.: 470K1

PROJECT NAME/LOCATION: UANG Site 5 and Site 6

SAMPLERS: (Signature) Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	SVOA (8270)	TPH (E 418.1)			REMARKS
55	12-8	10:01		X	UANG-55-SB2 (6-8.5)	2	X	X	X			all samples preserved on ice
55	12-8	11:01		X	UANG-55-SB3 (6-8.5)	2	X	X	X			all samples are soil samples
55	12-8	11:10		X	UANG-55-SB3 (8.5-11)	2	X	X	X			
55	12-8	12:01		X	UANG-55-SB4 (6-8.5)	2	X	X	X			MS/MSD FOR VOCs, SVOCs, TPH
56	12-8	16:43		X	UANG-56-SB1 (7-9)	2	X	X	X			
55	12-8	11:33		X	UANG-55-SB4 (2-4)	2	X	X	X			
56	12-8	16:15		X	UANG-56-SB1 (2.5-4.5)	2	X	X	X			
55	12-8	11:21		X	UANG-55-SB3 (~~0-2~~ 2-4)	2	X	X	X			
55	12-8	9:50		X	UANG-55-SB2 (2-4)	2	X	X	X			

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Brost	12-9-92 18:00				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Fed Ex# 9258743815

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT04.14.03	UANG

SAMPLERS: (Signature) Thomas M Jones, James F Berard

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	8010/8020	8270	418.1	ppm			REMARKS
54	2/8/93	1230		X	SS SB6 (1-3)	2	X	X	X				All samples preserved
55	2/8	1250		X	SS SB6 (5-7)	2	X	X	X				w/ ice
57	2/8	1320		X	UANG 57 SB7 (1-3)	2	X	X	X	X			
57	2/8	1340		X	UANG 57 SB7 (5-7)	2	X	X	X	X			Trip blank preserved w/ HCl
55	2/9	1405		X	UANG 55 SB7 (1-3)	2	X	X	X				
55	2/9	1425		X	UANG 55 SB7 (5-7)	2	X	X	X				Send results to:
55	2/9	1505		X	UANG 55 SB5 (1-3)	2	X	X	X				Gene Wright
55	2/9	1520		X	UANG 55 SB5 (5-7)	2	X	X	X				Engineering Science
TB20	2/9	0815		X	UANG TB20 (trip blank)	2	X						SLC, Utah

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Thomas M Jones	2/9/93 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: UT014.14.03
PROJECT NAME/LOCATION: UANG - Site 6 / Site 1/Site 3
SAMPLERS: (Signature) Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	E418.1	SW8240	SW8270	SW8080	Preservatives	REMARKS
S6	12/11/92	1410		X	UANG-S6-SB9 (0-2)	2	X	6	X		Ice	
S6	12/11/92	1440		X	UANG-S6-SB9 (6-8.5)	2	X	X	X		Ice	
S6	12/11/92	1507		X	UANG-S6-SB10 (0-2)	2	X	X	X		Ice	please send results
S6	12/11/92	1545		X	UANG-S6-SB10 (6-8.5)	2	X	X	X		Ice	to Gene A. Wright
S6	12/11/92	1445		X	UANG-S6-SB9 (8.5-11)	2	X	X	X		Ice	Project Manager
S3	12/11/92	1410		X	UANG-S3-SS4 (North Sample)	2	X	X	X		Ice 2-8oz Jars	
S3	12/11/92	1420		X	UANG-S3-SS5 (South Sample)	2	X	X	X		Ice 2-8oz Jars	
S3	12/11/92	1415		X	UANG S3-SS6 (West Sample)	2	X	X	X		Ice 2-8oz Jars	
S3	12/11/92	1030		X	UANG S3-SS3 (Sample 3)	2	X	X	X		Ice 2-8oz Jars	
S6	12/11/92	1545		X	UANG SB-10 (6-8.5) MS	2	X	X	X		Ice	
S6	12/11/92	1545		X	UANG SB-10 (6-8.5) MSD	2	X	X	X		Ice	* All samples consist
S1	12/11/92	1036		X	UANG-SB-2 (0-2)	1				X	Ice 1-8oz Jar	of 1 stainless capped
S1	12/11/92	1055		X	UANG-SB-2 (4-6.5)	1				X	Ice 1-8oz Jar	for VOA and 1-8oz Jar
S1	12/11/92	1055		X	UANG-SB2 (4-6.5) MS	1				X	Ice 1-8oz Jar	for SVOA + TPH unless
S1	12/11/92	1055		X	UANG-SB2 (4-6.5) MSD	1				X	Ice 1-8oz Jar	otherwise stated.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Brost	12/11/92 18:15				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex # 925874391 1	

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ENGINEERING-SCIENCE

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Chain-of-Custody Record

PROJ. NO.: UT014

PROJECT NAME/LOCATION: UANG site 6, site 3

SAMPLERS: (Signature) Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOA (8240)	SVOA (8270)	TPH (E 418.1)				REMARKS
S6	12/10/92	10:01		X	UANG-S6-SB5(6-8.5	2	X	X	X				
S6	12/10/92	15:37		X	UANG-S6-SB8(6.5-9)	2	X	X	X				One capped VOA and
S6	12/10/92	14:35		X	UANG-S6-SB7(6-8.5)	2	X	X	X				one 8 oz jar for
S6	12/10/92	11:30		X	UANG-S6-SB6(8.5-11)	2	X	X	X				SVOA and TPH
S6	12/10/92	11:25		X	UANG-S6-SB6(6-8.5)	2	X	X	X				
[illegible]	12/10/92	15:40		X	UANG-S3-SS1	2	X	X	X				Two 8 oz jars for
[illegible]	12/10/92	16:15		X	UANG-S3-SS2	2	X	X	X				VOA, SVOA and TPH
[illegible]	12/10/92	11:03		X	UANG-S6-SB6(2-4)	2	X	X	X				
S6	12/10/92	14:12		X	UANG-S6-SB7(2-4)	2	X	X	X				one capped VOA and
S6	12/10/92	15:15		X	UANG-S6-SB8(2.5-4.5)	2	X	X	X				one 8 oz jar for
S6	12/10/92	09:30		X	UANG-S6-SB5(0-2)	2	X	X	X				SVOA and TPH

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Brost	12/10/92 18:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: FED EX AIR BILL #9258743830	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UTOM.	UANG Site 6, Site 3

SAMPLERS: (Signature) Darin Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	SVOA (8270)	TPH (E418.1)				REMARKS
S6	12/10/92	1620		X	UANG RES - S6	7	X	X	X				40 ml preserved with HCL
S3	12/10/92	0945		X	UANG TBB (Site 3)	1	X						2 (1 liter) SVOA on ice
S6	12/10/92	0800		X	UANG TB7 (Site 6)	1	X						1 (1 liter) TPH H_2SO_4
													all samples are water samples
													and are shipped on blue ice.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darin Brost	12/10/92 18:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks FED EX AIR BILL #9258714 3030	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UTOM	UANG site 6

SAMPLERS: (Signature) Darien Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOA (8240)	SVOA (8270)	TPH (E 418.1)				REMARKS
SG	12/9/92	1115		X	UANG SG-SB3 ~~(6.0-8.5)~~ (6.5-9.0)	2	X	X	X				each sample interval has one
SG	12/9/92	1450		X	UANG SG-SB4 (6.0-8.5)	2	X	X	X				capped VOA and one 8 oz jar
SG	12/9/92	1455		X	UANG SG-SB4 (8.5-11.0)	2	X	X	X				for SVOA and TPH
SG	12/9/92	1015		X	UANG SG-SB2 (6.0-8.5)	2	X	X	X				
SG	12/9/92	1410		X	UANG SG-SB4 (0-2)	2	X	X	X				All samples are shipped on ice.
	~~12/9/92~~	~~1423~~		~~X~~	~~UANG SG-SB4 (2-4)~~	~~2~~	~~X~~	~~X~~	~~X~~				
	12/9/92	1104		X	UANG SG-SB3 (0.5-2.5)	2	X	X	X				
	12/9/92	0950		X	UANG SG-SB2 (2-4)	2	X	X	X				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darien Brost	12-9-92 19:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Fed Ex Bill #9258743826	

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Chain-of Custody Record

PROJ. NO.: UTOH

PROJECT NAME/LOCATION: UANG site 6

SAMPLERS: (Signature) Darren Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOA (8240)	SVOA (8270)	TPH (E418.1)				REMARKS
S6	12/9/92	1615		X	UANG RB4-S6	2		X					SVOA on ice (amber liter)
S6	12/9/92	1615		X	UANG RB4-S6	1			X				TPH preserved with H_2SO_4 amber liter
S6	12/9/92	1615		X	UANG RB4-S6	3	X						VOA preserved with HCL (40ml)
TB6	12/9/92	0800		X	UANG TB6	1	X						preserved with HCL (40 ml)
													All samples are shipped on ice
													and all are water samples

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Darren Brost	12-9-92 / 18:00				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				FedEX Bill # 9258743826

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Chain-of Custody Record

PROJ. NO.: UT014.19.03

PROJECT NAME/LOCATION: Utah Air National Guard (UANG)

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010/8020	8270	8080	PPM	
S6	2/4/93	1534		X	UANG-FBT-19	6	X	X	X*	X	
S6	2/4/93	1549		X	UANG-S6-MW3-EDR-20	2	X				
S6	2/4/93	1610		X	UANG-S6-MW3-18	2	X				
S6	2/4/93	1203		X	UANG-S6-MW1-16	2	X				
S5	2/4/93	1185		X	UANG-S5-MW1-10	2	X				
S6	2/4/93	1515		X	UANG-S6-MW2-17	2	X				
TB	2/4/93	0915		X	UANG-TB-19 (GW)	2	X				

REMARKS:

1. All VOAs are preserved with HCl
2. PPM is preserved with HNO_3
3. All 8270 and 8080 bottles are preserved with Ice.

*- one bottle is on this C-O-C and in this cooler the other 950ml Amber bottle is on the other C-O-C and in the other cooler.

Please Send Results to:
Gene A. Wright
Engineering-Science, Inc.
Salt Lake City, UT.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	2-4/93 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex# 6288611630	

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6

Chain-of Custody Record

PROJ. NO.: UT041.14.08

PROJECT NAME/LOCATION: Utah Air National Guard (UANG)

SAMPLERS: (Signature) Todd W Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS		8010/8020	8270	8080	PPM		REMARKS
55	2/4/93	1115		x	UANG 55-MW1-10 **	2			X				** One 8270 bottle is labelled 2-3-93 it should be 2-4-93.
56	2/4/93	1515		x	UANG-56-MW2-17	2			X				
56	2/4/93	1610		x	UANG-56-MW3-18	2			X				* one bottle in this shipment the other bottle is on the other C.O.C and in the other cooler.
56	2/4/93	1549		x	UANG-56-MW3-FDR-20	2			X				
56	2/4/93	1203		x	UANG-56-MW1-16	2			X				
56	2/4/93	1534		x	UANG-56-FB7-19	~~0~~ 1				X*			① All 8270 and 8080 bottles are preserval with Ice.
													Please send Results to: Gene A. Wright Project Manager Engineering-Science, Inc. Salt Lake City, Utah

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Todd W Graves	2-4-93 / 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex # 6288611630	

Distribution Original Accompanies Shipment. Copy returned with Report.

570-91FM

ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: UT014

PROJECT NAME/LOCATION: UANG site 7,

SAMPLERS: (Signature) Thomas M. Jensen   Darin Brost

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	SVOA (8270)	TPH (E 418.1)	PPM (metals)			REMARKS
S7	12/14	17:30		X	UANG-RBB-S7	5-1L 4-40ml	X	X	X	X			H2SO4, HNO3, HCL, for preservation
S7	12/14	10:00		X	UANG TB9	1	X						HCL for preservation
S7	12/14	11:37		X	UANG-S7-SB4(4.5-6.5)	2	X	X	X	X			All samples are preserved
S7	12/14	14:37		X	UANG-S7-SB5(4.5-6.5)	2	X	X	X	X			on ice and all water samples
S7	12/14	14:45		X	UANG-S7-SB5(6.5-9)	2	X	X	X	X			
S7	12/14	15:30		X	UANG-S7-SB6(4-6)	2	X	X	X	X			
													All soil samples preserved on ice.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Thomas M Jensen	Dec 14, 1992 18:30				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				Fed Ex # 925874?900	

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT014	UANG ~~T~~B4 and RB2

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOA (8240)	SVOA (8270)	TPH E (418.1)	DRM [illegible]			REMARKS
RB2	12/7/92	1430		X	UANG 232-54	7	X	X	X	X			Trip blank [illegible] VOA [illegible]
TB4	12/7/92	0900		X	UANG 724	1	X						[illegible]
													SVOA [illegible]
													[illegible]
													[illegible]
													[illegible]
													[illegible] on ice.
													[illegible]
													[illegible] SLC Utah.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	12-7-92 / 1833				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex # 9258 7439ZZ	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: 470141.11.03

PROJECT NAME/LOCATION: UANG [illegible] 7

SAMPLERS: (Signature) [signature]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOA (8240)	SVOA (8270)	PPM (12 metals)	TPH (E418.1)			Preservatives	REMARKS
					~~UANG RB-1~~ 7/45	~~4 [illegible]~~						•		All samples preserved on ice
					7/45									All samples [illegible]
57	12/4/92	0940		X	UANG 57-SB2 (2.5-4.5)	2	X	X	X	X				ice
57	12/4/92	1010		X	UANG 57-SB2 (6.5-9.0)	2	X	X	X	X				ice
57	12/4/92	1055		X	UANG 57-SB3 (2.5-4.5)	2	X	X	X	X				ice
[illegible]	12/4/92	1145		X	UANG 57-SB3 (6.5-9.0)	2	X	X	X	X				ice MS/MSD VOCs, SVOCs, TPH, METS
[illegible]	12/4/92	1230		X	UANG 57-SB3 (9.0-11.0)	2	X	X	X	X				ice
[illegible]	12/4/92	1425		X	UANG 54-SB1 (2.5-4.5)	2	X	X	X	X				ice
[illegible]	12/4/92	1510		X	UANG 54-SB1 (6.5-9.0)	2	X	X	X	X				ice

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	12/4/92 1625				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				FedEx # 9258743933

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UT014.14.03	UANG - [illegible] 7

SAMPLERS: (Signature) [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	SVOA	TPH [illegible]	[illegible]	VOA			REMARKS
RB-1	12/14/92	1100		X	UANG RB-1	1 liter	X						[illegible]
RB-1	12/14/92	1105		X	UANG RB-1	1 liter	X						
RB-1	12/14/92	[illegible]		X	UANG RB-1	1 liter		X					preserved with H_2SO_4 [illegible] HCL
RB-1	12/14/92	1107		X	UANG RB-1	1 liter			X				[illegible]
RB-1	12/14/92	1101		X	UANG RB-1	1 40ml				X			SW 8030/SW 8240 [illegible] HCL
[illegible]	12/14/92	1102		X	UANG RB-1	1 40ml				X			
[illegible]	12/14/92	1103		X	UANG RB-1	1 40ml				X			
[illegible]	12/14/92	0800		X	UANG TB2	1 40ml				X			trip blank - HCL [illegible]
													note: all samples preserved [illegible]
													all samples are water samples
													Please send results to
													[illegible] A Wright
													SLC, Utah

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]	12/4/92 1840				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Airbill Fed Ex # 9258743933	

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ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
UTO14.14.03	UANG Site 7

SAMPLERS: (Signature) Thomas M ...

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOA (8240)	PPM (13)	SVOA (8270)	TPH (418.1)		Preservatives	REMARKS
SB1	12/3/92	1540		X	UANG ST-SB1 (2.5-4.5 feet)	TWO 2	X	X	X	X		Ice	SVOA, TPH and PPM in one 5oz VOA ...
SB1	12/3/92	1630		X	UANG ST-SB1 (7.0-9.0 feet)	TWO 2	X	X	X	X		Ice	" "
													Please Send Results To
													Gene A. Wright
													Salt Lake City, UT

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Thomas M ...	Dec 3, 1992 / 1800				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				FedEx # 9258743944 all samples are soil samples

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Chain-of Custody Record

PROJ. NO.: UT014.14.08

PROJECT NAME/LOCATION: UANG - Utah Air National Guard

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010/8020	8270	PPM			REMARKS
ST	2/3/93	1600		X	UANG ST MW1-11	2	X					① 8270 non acidified
ST	2/3/93	1745		X	UANG ST MW1-EQR-13	2	X					② PPM - filtered + preserved with
S4	2/3/93	1210		X	UANG S4 MW1-9	2	X					HNO_3
FB6	2/3/93	1525		X	UANG FB6-15	2	X					③ 8010/8020 acidified with HCl
ST	2/3/93	1753		X	UANG-ST-MW2-EQR-14	5	X	X	X			④ All samples are water and
ST	2/3/93	1720		X	UANG-ST-MW2-12	5	X	X	X			are shipped on ice.
TB	2/3/93	1104		X	UANG-TB-18-GW	2	X					
												Please send Results to:
												Gene A. Wright
												Engineering-Science, Inc.
												Salt Lake City

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	2/3/93 1925				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed Ex # 6288611733	

Distribution Original Accompanies Shipment. Copy returned with Report.

ENGINEERING-SCIENCE

1935 Vine Street - Suite 240, Salt Lake City, Utah 84121 • 801-272-5999 • 801-272-6069 (Fax)

Chain-of Custody Record

PROJ. NO.: UT014.14.08

PROJECT NAME/LOCATION: UANG / SLC, Utah

SAMPLERS: (Signature) TM [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010/8020	8270	PPM-			REMARKS
57	2/3/93	1600		X	UANG 57 MW1-11	3	X	X	X			8270 non acidified
57	2/3	1745		X	UANG 57 MW1-EQR-13	3	X	X	X			PPM acidified w/ HNO_3
54	2/3	1210		X	UANG 54 MW1-9	3	X	X	X			~~8010/8020 acidified w/ HCl~~
EB6	2/3	1525		X	UANG-EB6-15	3	X	X	X			~~all samples are water~~
												~~and are shipped on ice~~
												All PPM-Samples are filtered
												Please Send Results To:
												Gene A. Wright
												Engineering-Science, Inc.
												Salt Lake City, Utah

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	2-3-93 / 1830				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Fed Ex # 6288611733	

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Kudr...

DataChem Laboratories
CHAIN-OF-CUSTODY
Environmental Contract Program

THIS SET DIES:	TIME	DEADLINE	STARTED
Preparation:			
Analysis:			

SDG/Batch #:

DCL Set ID:

Client: Engineering - Science Account:

Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	QC	Matrix	Cooler	SPLIT / SUBSEQUENCE / ANALYSIS: 8010/8020
5/25/94	UMAG-510-4B1-8-10			Soil		X

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature ______ / ______ / ______

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
[signature]	5/27 1154	[signature]	

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP/ANALYSIS FOR: ______ LAB NOTEBOOK NO.

Prepared/Analyzed by: ______ Date/Time: ______

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

Revised 08/...

ENGINEERING-SCIENCE

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Chain-of Custody Record

PROJ. NO.: 724017

PROJECT NAME/LOCATION: Utah Air National Guard - POL

SAMPLERS: (Signature) Robert Graves / Robert W. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010	8015 mod.	8020				REMARKS
S10	5/25	0727		X	UANG-S10-TB1	2	X					EN 1326	H_2O sample - 2-40ml VOAs.
S10	5/25	0857		X	UANG-S10-SB1-2-4	2	X	X	X				EN 1324
S10	5/25	0955		X	UANG-S10-SB1-6-8	2	X	X	X				↓ 1325

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Graves	5/26/94 1722	Mark Mendenhall			

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		Julie Daratt	5/26/94 5:22pm	

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Chain-of Custody Record

S94 0352

PROJ. NO.: 724017

PROJECT NAME/LOCATION: Utah Air National Guard - POL

SAMPLERS: (Signature) Robert Graves / Rolf W Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	8010	8015 mod.	8020			REMARKS
~~S10~~	~~5/26~~	~~0730~~		~~X~~	~~UANG-S10-TB2~~	~~2~~	~~X~~			~~MM 5-26-94~~	~~EN 1318~~	~~2-40ml VOAs - H2O~~ RWG
S10	5/26	0940		X	UANG-S10-SB2A 2-4	2	X	X	X			EN 1318
S10	5/26	0954		X	UANG-S10-SB2 4-6	2	X	X	X			1319
S10	5/26	1049		X	UANG-S10-SB3 1-3	2	X	X	X			1320
S10	5/26	1102		X	UANG-S10-SB3 3-5	2	X	X	X			1321
S10	5/26	1334		X	UANG-S10-SB4 2-4	2	X	X	X			1322
S10	5/26	1353		X	UANG-S10-SB4 4-6	2	X	X	X			1323

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rolf W Graves	5-26-94 / 1722	Mark Mendenhall		/	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
	/	Julie Worcester	5/26/94 / 5:22pm		

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Mark Mendenhall

Chain-of-Custody Forms

1995

THIS SET DIES:	TIME	DEADLINE	STARTED
Preparation:			
Analysis:			

Page ____ of ____

DataChem Laboratories
CHAIN-OF-CUSTODY
Environmental Contract Program

SDG/Batch #: RES01

DCL Set ID: SX-0684

Client: Parsons ES   Account: 3124

Comments:

SPLIT

SUBSEQUENCE

ANALYSIS

Date Sampled	Field ID Number	DCL Sample Number(s)	QC	Matrix	Cooler	TRPH	SVOCs	Pesticides	metals	VOCs
8-16-95	WANG-BGMW2 (0-2)			Soil		/	/	/	/	/
8-16-95	WANG-BGMW2 (2-4)			Soil		/	/	/	/	/
8-16-95	WANG-BGMW2 (4-6)			Soil		/	/	/	/	/
8-16-95	WANG-BGMW2 (6-8)			Soil		/	/	/	/	/
8-16-95	WANG-RB1		✓	Water		/	/	/	/	/
8-16-95	WANG-TB1		✓	Water						X

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature ____ / ____ / ____

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
[illegible]	8-16-95/1620	[illegible]	RCVD AT LAB
[illegible]	8-17-95/1200	[illegible]	Log-in

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP/ANALYSIS FOR: ________ LAB NOTEBOOK NO.

Prepared/Analyzed by: ________ Date/Time: ________

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

ENGINEERING-SCIENCE

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Chain-of Custody Record

~~595 5?68~~ 8/25-95

PROJ. NO.	PROJECT NAME/LOCATION
724017	UANG / Site 4

SAMPLERS: (Signature) P A. Foote

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	Volatiles	SVOC	TRPH	Metals	Arsenic	Pest	REMARKS
9027	8/22/95	0915		✓	UANG-S7-MW02-GW2	8	✓	✓	✓	✓			
9028	8/22/95	1120		✓	UANG-S7-MW02-GW2	8	✓	✓	✓	✓			
9029	8/22/95	1220		✓	UANG-S4-MW01-GW2	7	✓	✓		✓			
9030	8/22/95	1330		✓	UANG-S5-MW01-GW2	7	✓	✓			✓		
9031	8/2?/95	0830		✓	UANG TB02	2	✓						
9032	8/2?/95	1450		✓	UANG FB 02	10	✓	✓	✓	✓	✓	✓	
9033	8/20/95	1430		✓	UANG S6-MW02-GW2	7	✓	✓			✓		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible signature]	8/22/95 1600	Michael McMillan	Michael McMillan	8-22-95 1600	[illegible signature]
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
724017	UANG / Site 6

SAMPLERS: (Signature) P. Foote R. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOC	SVOC	ARSENIC				REMARKS
	8/24/95	1105		✓	UANG-S6-MW01-GW2	7	✓	✓	✓				
	8/24/95	1105		✓	UANG-S6-MW02-GW2	14	✓	✓	✓				MS/MSD
	8/24/95	1347		✓	UANG-S6-MW02-GW2	7	✓	✓	✓				
	8/24/95	1640		✓	UANG-S6-MW03-GW2	7	✓	✓	✓				
	8/24/95	1836		✓	UANG-S6-MW04-GW2	7	✓	✓	✓				
	8/24/95	1919		✓	UANG-S6-MW05-GW2	7	✓	✓	✓				
	8/24/95	0800		✓	UANG-TB03	2	✓						
					3 COOLERS								

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Paul A. [signature]	8/24/95 2040	Michael McMillan [signature]	Michael McMillan [signature]	8-24-95 2040	[signature]
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks

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Chain-of Custody Record

PROJ. NO.: 724017

PROJECT NAME/LOCATION: UTAH ANG BASE

SAMPLERS: (Signature) P. Foote, R. Graves

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	VOC	SVOC	TRPH	METALS	Pesticides	Arsenic	REMARKS
	8/25/95	1115		✓	UANG-S3-MW01-GW2	7	✓	✓				✓	
	11	1200		✓	UANG-S3-MW02-GW2	7	✓	✓				✓	
	11	1442		✓	UANG-BG-MW02-GW2	10	✓	✓	✓	✓	✓		
	11	1715		✓	UANG-S1-MW02-GW2	7	✓				✓	✓	
	11	1740		✓	UANG-S1-MW01-GW2	7	✓				✓	✓	
	11	0830		✓	UANG-TB04	2	✓						
					2 coolers								

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]	8/25/95 1830	[illegible]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

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ENGINEERING-SCIENCE
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Chain-of Custody Record

PROJ. NO. 724017

PROJECT NAME/LOCATION Utah ANG Base

SAMPLERS: (Signature) P. Foote

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOC	SVOC	TRPH	Metals	Pesticides		REMARKS
	8/28/95	1250		✓	UANG-RB03-GW2	10	✓	✓	✓	✓	✓		
	11	1320		✓	UANG-S2-MW02-GW2	7	✓	✓		✓			
	11	1320		✓	UANG-S2-MW03-GW2	7	✓	✓		✓			
	11	1420		✓	UANG-S2-MW01-GW2	7	✓	✓		✓			
	11	1420		✓	UANG-S2-MW01-GW2	7	✓	✓		✓			MS/MSD
	11	1600		✓	UANG-BG-MW01-GW2	10	✓	✓	✓	✓	✓		
	11	1720		✓	UANG-FB03-GW2	10	✓	✓	✓	✓	✓		
	11	0930		✓	UANG-TB05-GW2	2	✓						
					2 Coolers								Note: Returned 5 cases of 1 l Amber Glass PAF

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Paul A. Foote	8-28-95 / 1755	Amaryllis McElwee			

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks

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Chain-of Custody Record

PROJ. NO.	PROJECT NAME/LOCATION
724017	UTAH AIR NATIONAL GUARD

SAMPLERS: (Signature) [illegible]

PARAMETER: VOCS 8030-8010/8020

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOCS 8030-8010/8020						REMARKS
S1	11/6/95	1320			UANG-S1-MW1-GW2	2							Matrix - all water, Acidified HCL
S1	11/6/95	1410			UANG-S1-MW2-GW2	2							" "
S2	11/6/95	1530			UANG-S2-MW2-GW2	2							" "
S2	11/6/95	1630			UANG-S2-MW1-GW2	2							" "
S2	11/6/95	1730			UANG-S2-MW3-GW2	2							" "
S3	11/7/95	1045			UANG-S3-MW1-GW2	2							" "
RB	11/7/95	1115			UANG-RB2	2							" "
TB	11/6/95				UANG-TB6	1	X						" "

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]	11/7/95 1200	[illegible]			
[illegible]	[illegible] 1200				
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: PM: Kevin Griffiths; Note: see contract scope of work	

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Chain-of Custody Record

PROJ. NO.: 724017

PROJECT NAME/LOCATION: Utah Air National Guard

SAMPLERS: (Signature) Thomas M Janson

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CON-TAINERS	PARAMETER: Arsenic SW7060D						REMARKS
S6	11/8/95	1015			UANG-S6-MW1-GW2	1							water samples filtered
S6	11/8/95	1115			UANG-S6-MW4-GW2	1							preserved w/ HNO_3
S6	11/8/95	1345			UANG-S6-MW2-GW2	1							
S6	11/8/95	1445			UANG-S6-MW3-GW2	1							

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Thomas M Janson	11/8/95 1515	Erica Mill			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Contact: Kevin Griffiths. Note: See contract scope of work	

Distribution Original Accompanies Shipment. Copy returned with Report.

APPENDIX E

TABLE OF CONTENTS

QA/QC Report No. 1

Data Validation Summary

1992, 1993, and 1994

QA/QC REPORT NO. 1

TABLE OF CONTENTS

QA/QC REPORT NO. 1

LIST OF TABLES

QA/QC REPORT NO. 1
ACRONYMS

%C	Percent Complete
%D	Percent Difference
%R	Percent Recovery
%RSD	Percent Relative Standard Deviation
ANGRC	Air National Guard Readiness Center
ASTM	American Society for Testing and Materials
BFB	Bromofluorobenzene
BNA	Base/Neutral/Acid Equivalent to Semivolatile Organic Compounds
BP	2-Fluorobiphenyl
BRCLM	Bromochloromethane
CCAL	Continuing Instrument Calibration for Organics Analysis
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verifications (for metals analysis)
CLFLB	Chlorofluorobenzene
CLP	Contract Laboratory Program
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
CVAA	Cold-Vapor Flameless Atomic Absorption Spectrometer
DCB	Decachlorobiphenyl or 1,2-Dichlorobenzene-d_4
DCE	1,2-dichloroethane-d4
DOE/HWP	Department of Energy Hazardous Waste Plan
oC	Degrees Celsius
DFTPP	Decafluorotriphenylphosphine
ECD	Electron Capture Detection
EPA	Environmental Protection Agency
EQR	Equipment Rinseate Blank
FB	Field Blank
FBP	2-Fluorobiphenyl
GC	Gas Chromatograph

GC/MS	Gas Chromatography/Mass Spectrometry
GFAA	Graphite Furnace Atomic Absorption
HAZWRAP	Hazardous Waste Remedial Action Program
ICAL	Initial Instrument Calibration for Organics Analysis
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICV	Initial Calibration Verification (for metals analysis)
IDL	Instrument Detection Limit
IR	Infrared
IS	Internal Standards
ISM-A	Individual Standard Mixture A
ISM-B	Individual Standard Mixture B
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
m/z	Mass to Charge Ratio
MDL	Method Detection Limit
Metals	13 Priority Pollutant Metals
mg/Kg	Milligrams Per Kilogram
MSA	Method of Standard Addition
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	Not Applicable
NBZ	Nitrobenzene-d_5
ND	Non-Detect
PB	Preparation Blank
PCBs	Polychlorinated Biphenyls
PEM	Performance Evaluation Mixture
PESTs	Pesticides
PHL	Phenol-d_5
PQL	Practical Quantitation Limit
PRDL	Project-required Detection Limit
PRQL	Project Required Quantitation Limit

QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
r	Linear Regression Correlation Coefficient
RB	Rinseate Blank
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SAP	Sampling and Analysis Plan (1992b)
SDG	Sample Delivery Group
SI	Site Investigation
SVOCs	Semi Volatile Organic Compounds
TB	Trip Blank
TBP	2,4,6-Tribromophenol
TCLP	Toxicity Characteristic Leachate Procedure
TCX	Tetrachloro-m-xylene
TOL	Toluene-d8
TPH	Total Petroleum Hydrocarbons or Terphenyl-d_{14}
TRIFL	Toluene-trifluorotoluene
TRPH	Total Recoverable Petroleum Hydrocarbons
2CP	2-Chlorophenol-d_4
2FP	2-Fluorophenol
UANG	Utah Air National Guard
ug/g	Micrograms per Gram
ug/L	Micrograms per Liter
ug/Kg	Micrograms per Kilogram
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

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QA/QC REPORT NO. 1
DATA VALIDATION SUMMARY

E.1 INTRODUCTION

Soil and groundwater samples were collected to determine the presence and/or absence and the extent of contamination present at Sites 1-7, at the Utah Air National Guard (UANG) Base and sediment, and surface water samples from the City Drain Canal which drains surface and groundwater from the Base and industrial facilities located to the south. The samples were collected following the Site Investigation (SI) Sample and Analysis Plan (SAP, 1992b). A total of 208 field samples including 127 soil, 10 sediment, and 71 aqueous samples were collected between October 22, 1992, and February 12, 1993.

Soil and water samples were collected for priority pollutant metals (PPM), volatile organic compounds (VOCs), purgable halogenated and aromatic volatile organic compounds, total recoverable petroleum hydrocarbons (TRPH), and pesticides (PESTs) and polychlorinated biphenyls (PCBs) analysis. Samples were shipped via overnight courier to Engineering-Science, Inc.-Berkeley Laboratory (now Pace Laboratory) for analysis. All samples were packed in the field and shipped on ice to maintain sample temperatures between four and six degrees centigrade (°C).

Additionally, a second sampling event was requested by HAZWRAP, and the Air National Guard Readiness Center (ANGRC) during May of 1994. One water and nine soil samples were collected from Site 10 for SW846 methods 8010/8020 and 8015 Modified (diesel and gasoline TPH). One soil sample was analyzed for 8080, 8270 and 8240 only. During October of 1994, 16 soils and three water samples were collected from Site 1, for analysis by EPA SW846 methods 8010 and 8080. On 9 December 1994 two soil samples, composited from 9 drums at Sites 1 and 10, were collected for Toxicity Characteristic Leachate Procedure (TCLP) analysis. These samples were analyzed by DataChem Laboratories of Salt Lake City, Utah.

The laboratories analyzed the samples using the following methods;

- 13 PPM by methods SW6010 and the appropriate SW7000 series,
- VOCs by method SW8240,
- Purgable halogenated volatile organics by method SW8010,
- Purgable aromatic volatile organics by method SW8020,
- Semivolatile organic compounds (SVOCs) [Base/Neutral/Acids (BNAs)] by method SW8270,
- PESTs/PCBs by method SW8080,
- TRPH by method E418.1,
- Total Petroleum Hydrocarbons (TPH), both gasoline and diesel fractions by method SW8015 Modified, and
- TCLP by extraction method 1311 and analyses methods 8240, 8270, and 3015 for 8 RCRA Metals.

The analysis methods used are specified in USEPA, 1986a, *Test Methods for Evaluating Solid Wastes*, SW846, 3rd Edition ("SW" Methods); and *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-79-0202 ("E" methods).

Level C data review and validation were performed using guidelines specified in Section 6.2 of DOE/HWP-65/R1. Specific criteria used for data assessment were based on the EPA CLP *National Functional Guidelines for Organic Data Review*; documents OLM01.0 and OLC01.0 dated December 1990; and *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis*, dated July 1988.

E.1.1 Criteria Used to Assess Laboratory Data Quality

The Quality Control (QC) criteria used to assess data quality included technical holding times, initial instrument calibration (ICAL), initial and continuing calibration verification (ICV and CCV), preparation blanks (PB), initial and continuing calibration blank (ICBs and CCBs), matrix spike/matrix spike duplicates (MS/MSDs), inductively coupled plasma analysis (ICP), interference check samples (ICSs), laboratory control samples (LCSs), laboratory duplicate sample analysis, ICP serial dilution, graphite furnace atomic absorption (GFAA), and post digestion spike results.

E.1.2 Data Validation Qualifiers

Specific sample analytes traceable to QC violations were qualified as estimated ("J"), undetected ("U"), estimated as undetected ("UJ"), or unusable ("R"). Estimated and estimated as undetected field sample data are shown in Table E.1. Unusable field sample data are shown in Table E.2. The EPA qualifiers assigned to analytical results are shown in Table E.3.

E.1.3 Holding Time Compliance

For all of the analyses conducted, specific holding times applied. Table E.4 presents A Summary of Holding Times for Environmental and QA Samples. Metals are not shown because of the 180-day holding times allowed.

TABLE E. 1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Antimony	D,I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Arsenic	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Beryllium	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Cadmium	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Chromium	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Copper	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Lead	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Nickel	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Selenium	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Silver	C
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Thallium	I
UJ	Metals	CLP 12075	UANG-BG-MW1-1	Zinc	I
UJ	SVOCs	CLP 12075	UANG-BG-MW1-1	4-Nitroaniline	C
UJ	Metals	4737.01	UANG-BG-SB1 (S1)	Antimony	D
J	Metals	4737.01	UANG-BG-SB1 (S1)	Arsenic	D
J	Metals	4737.01	UANG-BG-SB1 (S1)	Beryllium	A
J	Metals	4737.01	UANG-BG-SB1 (S1)	Cadmium	A
J	Metals	4737.01	UANG-BG-SB1 (S1)	Chromium	G
J	Metals	4737.01	UANG-BG-SB1 (S1)	Lead	D
UJ	Metals	4737.01	UANG-BG-SB1 (S1)	Mercury	E
UJ	Metals	4737.01	UANG-BG-SB1 (S1)	Thallium	D,H
J	Metals	4737.01	UANG-BG-SB1 (S1)	Zinc	G
UJ	SVOCs	4737.01	UANG-BG-SB1 (S1)	4-Chloroaniline	C
UJ	SVOCs	4737.01	UANG-BG-SB1 (S1)	4-Nitroaniline	C
UJ	VOCs	4737.01	UANG-BG-SB1 (S1)	Dibromomethane	C
UJ	VOCs	4737.01	UANG-BG-SB1 (S1)	Dichlorodifluoromethane	B
UJ	Metals	4737.02	UANG-BG-SB1 (S2)	Antimony	E,D,A
J	Metals	4737.02	UANG-BG-SB1 (S2)	Arsenic	D
J	Metals	4737.02	UANG-BG-SB1 (S2)	Beryllium	A
J	Metals	4737.02	UANG-BG-SB1 (S2)	Cadmium	A
J	Metals	4737.02	UANG-BG-SB1 (S2)	Chromium	G
J	Metals	4737.02	UANG-BG-SB1 (S2)	Lead	D
UJ	Metals	4737.02	UANG-BG-SB1 (S2)	Mercury	E
J	Metals	4737.02	UANG-BG-SB1 (S2)	Zinc	G
UJ	SVOCs	4737.02	UANG-BG-SB1 (S2)	Hexachlorocyclopentadiene	C
UJ	VOCs	4737.02	UANG-BG-SB1 (S2)	Dibromomethane	C
UJ	VOCs	4737.02	UANG-BG-SB1 (S2)	Dichlorodifluoromethane	B
UJ	Metals	4806.01	UANG-CS1	Antimony	D
J	Metals	4806.01	UANG-CS1	Beryllium	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Metals	4483.01	UANG-PI-5 (0-2)	Antimony	D
J	Metals	4483.01	UANG-PI-5 (0-2)	Arsenic	D
J	Metals	4483.01	UANG-PI-5 (0-2)	Beryllium	A
UJ	Metals	4483.01	UANG-PI-5 (0-2)	Cadmium	D
J	Metals	4483.01	UANG-PI-5 (0-2)	Chromium	D
J	Metals	4483.01	UANG-PI-5 (0-2)	Copper	D,E
UJ	Metals	4483.01	UANG-PI-5 (0-2)	Mercury	E
J	Metals	4483.01	UANG-PI-5 (0-2)	Nickel	D
UJ	Metals	4483.01	UANG-PI-5 (0-2)	Selenium	D,H
UJ	Metals	4483.01	UANG-PI-5 (0-2)	Silver	D
J	Metals	4483.01	UANG-PI-5 (0-2)	Zinc	D,G
UJ	SVOCs	4483.01	UANG-PI-5 (0-2)	Benzyl Alcohol	C
UJ	SVOCs	4483.01	UANG-PI-5 (0-2)	Hexachlorocyclopentadiene	B
UJ	SVOCs	4483.01	UANG-PI-5 (0-2)	4-Chlorophenyl-phenylether	B
UJ	SVOCs	4483.01	UANG-PI-5 (0-2)	Di-n-Butylphthalate	B,C
UJ	SVOCs	4483.01	UANG-PI-5 (0-2)	3, 3'-Dichlorobenzidine	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Aldrin	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Alpha-BHC	B,C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Delta-BHC	B,C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Gamma-BHC	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	4, 4'-DDD	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	4, 4'-DDT	B,C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Dieldrin	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Endosulfan I	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Endosulfan Sulfate	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Endrin Aldehyde	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Heptachlor	C
UJ	Pesticides	4483.01	UANG-PI-5 (0-2)	Methoxychlor	B,C
UJ	Metals	4483.02	UANG-PI-5 (6-8)	Antimony	D
J	Metals	4483.02	UANG-PI-5 (6-8)	Arsenic	D
J	Metals	4483.02	UANG-PI-5 (6-8)	Beryllium	A
UJ	Metals	4483.02	UANG-PI-5 (6-8)	Cadmium	D
J	Metals	4483.02	UANG-PI-5 (6-8)	Chromium	D
J	Metals	4483.02	UANG-PI-5 (6-8)	Copper	D,G
UJ	Metals	4483.02	UANG-PI-5 (6-8)	Mercury	E
J	Metals	4483.02	UANG-PI-5 (6-8)	Nickel	D
UJ	Metals	4483.02	UANG-PI-5 (6-8)	Selenium	D,H
UJ	Metals	4483.02	UANG-PI-5 (6-8)	Silver	D
J	Metals	4483.02	UANG-PI-5 (6-8)	Zinc	D,G
UJ	SVOCs	4483.02	UANG-PI-5 (6-8)	Benzyl Alcohol	C
UJ	SVOCs	4483.02	UANG-PI-5 (6-8)	Hexachlorocyclopentadiene	B
UJ	SVOCs	4483.02	UANG-PI-5 (6-8)	4-Chlorophenyl-phenylether	B
UJ	SVOCs	4483.02	UANG-PI-5 (6-8)	Di-n-Butylphthalate	B,C
UJ	SVOCs	4483.02	UANG-PI-5 (6-8)	3, 3'-Dichlorobenzidine	C
UJ	SVOCs	4483.02	UANG-PI-5 (6-8)	bis (2-Ethylhexyl) Phthalate	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Aldrin	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Alpha-BHC	B,C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Delta-BHC	B,C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Gamma-BHC	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	4, 4'-DDD	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	4, 4'-DDT	B,C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Dieldrin	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Endosulfan I	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Endosulfan Sulfate	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Endrin Aldehyde	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Heptachlor	C
UJ	Pesticides	4483.02	UANG-PI-5 (6-8)	Methoxychlor	B,C
J	Metals	4806.01	UANG-CS1	Chromium	G
J	Metals	4806.01	UANG-CS1	Lead	F
J	Metals	4806.01	UANG-CS1	Mercury	E,A
UJ	Metals	4806.01	UANG-CS1	Selenium	D,H
UJ	Metals	4806.01	UANG-CS1	Thallium	D,H
J	Metals	4806.01	UANG-CS1	Zinc	G
J	TRPH	4806.01	UANG-CS1	TRPH	D
UJ	SVOCs	4806.01	UANG-CS1	4-Chloroaniline	C
UJ	SVOCs	4806.01	UANG-CS1	3-Nitroaniline	B,C
J	SVOCs	4806.01	UANG-CS1	Phenanthrene	A
J	SVOCs	4806.01	UANG-CS1	bis (2-Ethylhexyl) Phthalate	C
UJ	SVOCs	4806.01	UANG-CS1	Di-n-octylphthalate	C
J	SVOCs	4806.01	UANG-CS1	Benzo (k) Fluoranthene	A
UJ	Pesticides	4806.01	UANG-CS1	Aldrin	C
UJ	Pesticides	4806.01	UANG-CS1	Endrin	C
UJ	Metals	4806.02	UANG-CS2	Antimony	D
UJ	Metals	4806.02	UANG-CS2	Cadmium	E,A
J	Metals	4806.02	UANG-CS2	Chromium	G
J	Metals	4806.02	UANG-CS2	Lead	F
UJ	Metals	4806.02	UANG-CS2	Mercury	E
UJ	Metals	4806.02	UANG-CS2	Selenium	D,H
UJ	Metals	4806.02	UANG-CS2	Thallium	D,H
J	Metals	4806.02	UANG-CS2	Zinc	G
UJ	SVOCs	4806.02	UANG-CS2	3-Nitroaniline	B
UJ	Pesticides	4806.02	UANG-CS2	Aldrin	C
UJ	Pesticides	4806.02	UANG-CS2	Endrin	C
J	TRPH	4806.02	UANG-CS2	TRPH	D
UJ	Metals	4806.03	UANG-CS3	Antimony	D
J	Metals	4806.03	UANG-CS3	Beryllium	A
J	Metals	4806.03	UANG-CS3	Chromium	G
J	Metals	4806.03	UANG-CS3	Lead	F,H
UJ	Metals	4806.03	UANG-CS3	Mercury	E
UJ	Metals	4806.03	UANG-CS3	Selenium	D,H
UJ	Metals	4806.03	UANG-CS3	Thallium	D,H

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	Metals	4806.03	UANG-CS3	Zinc	G
UJ	SVOCs	4806.03	UANG-CS3	4-Chloroaniline	C
UJ	SVOCs	4806.03	UANG-CS3	3-Nitroaniline	B,C
J	SVOCs	4806.03	UANG-CS3	Pyrene	A
J	SVOCs	4806.03	UANG-CS3	Chrysene	A
J	SVOCs	4806.03	UANG-CS3	bis (2-Ethylhexyl) Phthalate	C
UJ	SVOCs	4806.03	UANG-CS3	Di-n-octylphthalate	C
UJ	Pesticides	4806.03	UANG-CS3	Aldrin	C
UJ	Pesticides	4806.03	UANG-CS3	Endrin	C
J	TRPH	4806.03	UANG-CS3	TRPH	D
UJ	Metals	4806.04	UANG-CS4	Antimony	D
J	Metals	4806.04	UANG-CS4	Beryllium	A
UJ	Metals	4806.04	UANG-CS4	Cadmium	E,A
J	Metals	4806.04	UANG-CS4	Chromium	G
J	Metals	4806.04	UANG-CS4	Lead	F
UJ	Metals	4806.04	UANG-CS4	Mercury	E
UJ	Metals	4806.04	UANG-CS4	Selenium	D,H
UJ	Metals	4806.04	UANG-CS4	Thallium	D,H
J	Metals	4806.04	UANG-CS4	Zinc	G
UJ	SVOCs	4806.04	UANG-CS4	4-Chloroaniline	C
UJ	SVOCs	4806.04	UANG-CS4	3-Nitroaniline	B,C
UJ	SVOCs	4806.04	UANG-CS4	bis (2-Ethylhexyl) Phthalate	C
UJ	SVOCs	4806.04	UANG-CS4	Di-n-octylphthalate	C
UJ	Pesticides	4806.04	UANG-CS4	Aldrin	C
UJ	Pesticides	4806.04	UANG-CS4	Endrin	C
J	TRPH	4806.04	UANG-CS4	TRPH	D
UJ	Metals	4806.05	UANG-CS5	Antimony	D
J	Metals	4806.05	UANG-CS5	Beryllium	A
J	Metals	4806.05	UANG-CS5	Chromium	G
J	Metals	4806.05	UANG-CS5	Lead	F
UJ	Metals	4806.05	UANG-CS5	Mercury	E
J	Metals	4806.05	UANG-CS5	Selenium	D,H,A
UJ	Metals	4806.05	UANG-CS5	Thallium	D,H
J	Metals	4806.05	UANG-CS5	Zinc	G
J	SVOCs	4806.05	UANG-CS5	2-Methylnapthalene	A
J	SVOCs	4806.05	UANG-CS5	bis (2-Ethylhexyl) Phthalate	A
UJ	Metals	4806.06	UANG-CS6	Antimony	D
J	Metals	4806.06	UANG-CS6	Beryllium	A
J	Metals	4806.06	UANG-CS6	Chromium	G
J	Metals	4806.06	UANG-CS6	Lead	F
J	Metals	4806.06	UANG-CS6	Mercury	E
J	Metals	4806.06	UANG-CS6	Selenium	D,H
UJ	Metals	4806.06	UANG-CS6	Thallium	D,H
J	Metals	4806.06	UANG-CS6	Zinc	G
J	SVOCs	4806.06	UANG-CS6	Pyrene	A
J	SVOCs	4806.06	UANG-CS6	bis (2-Ethylhexyl) Phthalate	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Pesticides	4806.06	UANG-CS6	Endrin	C
J	TRPH	4806.06	UANG-CS6	TRPH	D
J	Metals	4806.07	UANG-CS7	Antimony	D,A
J	Metals	4806.07	UANG-CS7	Beryllium	A
J	Metals	4806.07	UANG-CS7	Chromium	G
J	Metals	4806.07	UANG-CS7	Lead	F
J	Metals	4806.07	UANG-CS7	Mercury	E
J	Metals	4806.07	UANG-CS7	Selenium	D,H,A
UJ	Metals	4806.07	UANG-CS7	Thallium	D,H
J	Metals	4806.07	UANG-CS7	Zinc	G
UJ	SVOCs	4806.07	UANG-CS7	3-Nitroaniline	B
J	SVOCs	4806.07	UANG-CS7	Pyrene	A
J	SVOCs	4806.07	UANG-CS7	bis (2-Ethylhexyl) Phthalate	A
UJ	Pesticides	4806.07	UANG-CS7	Endrin	C
J	TRPH	4806.07	UANG-CS7	TRPH	D
UJ	Pesticides	4806-10	UANG-CS-FB10	Heptachlor Epoxide	B
UJ	Metals	4806-10	UANG-CS-FB10	Antimony	E
UJ	Metals	4806-10	UANG-CS-FB10	Arsenic	D,F
UJ	Metals	4806-10	UANG-CS-FB10	Copper	E,A
UJ	Metals	4806-10	UANG-CS-FB10	Lead	D
UJ	Metals	4806-10	UANG-CS-FB10	Mercury	E
UJ	Metals	4806-10	UANG-CS-FB10	Nickel	E
UJ	Metals	4806-10	UANG-CS-FB10	Selenium	D
UJ	Metals	4806-10	UANG-CS-FB10	Thallium	D
UJ	Metals	4806-10	UANG-CS-FB10	Zinc	E,A
UJ	Pesticides	4806.09	UANG-CS-EQR	Heptachlor Epoxide	B
UJ	Metals	4806.09	UANG-CS-EQR	Antimony	E
UJ	Metals	4806.09	UANG-CS-EQR	Arsenic	D,F
J	Metals	4806.09	UANG-CS-EQR	Copper	E,A
UJ	Metals	4806.09	UANG-CS-EQR	Lead	D,H
UJ	Metals	4806.09	UANG-CS-EQR	Mercury	E
UJ	Metals	4806.09	UANG-CS-EQR	Nickel	E
UJ	Metals	4806.09	UANG-CS-EQR	Selenium	D
UJ	Metals	4806.09	UANG-CS-EQR	Thallium	D
UJ	Metals	4806.09	UANG-CS-EQR	Zinc	E,A
J	Metals	4804.01	UANG-CW1	Antimony	E,A
J	Metals	4804.01	UANG-CW1	Arsenic	D,F
J	Metals	4804.01	UANG-CW1	Cadmium	A
UJ	Metals	4804.01	UANG-CW1	Chromium	E,A
J	Metals	4804.01	UANG-CW1	Copper	A
UJ	Metals	4804.01	UANG-CW1	Lead	E,D
UJ	Metals	4804.01	UANG-CW1	Mercury	E
J	Metals	4804.01	UANG-CW1	Nickel	E,A
J	Metals	4804.01	UANG-CW1	Selenium	D,A
UJ	Metals	4804.01	UANG-CW1	Thallium	D,H
UJ	Metals	4804.01	UANG-CW1	Zinc	E,A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	VOCs	4804.01	UANG-CW1	Benzyl Chloride	C
UJ	VOCs	4804.01	UANG-CW1	Bromoform	B,C
UJ	VOCs	4804.01	UANG-CW1	Dibromochloromethane	C
UJ	VOCs	4804.01	UANG-CW1	Dichlorodifluoromethane	C
UJ	VOCs	4804.01	UANG-CW1	1,3-Dichloropropene	C
J	SVOCs	4804.01	UANG-CW1	Phenol	A
J	SVOCs	4804.01	UANG-CW1	2-Methylnapthalene	A
UJ	SVOCs	4804.01	UANG-CW1	Hexachlorocyclopentadiene	C
J	SVOCs	4804.01	UANG-CW1	4-Nitrophenol	A
UJ	SVOCs	4804.01	UANG-CW1	Hexachlorobenzene	C
UJ	SVOCs	4804.01	UANG-CW1	3,3'-Dichlorobenzidine	C
J	SVOCs	4804.01	UANG-CW1	bis (2-Ethylhexyl) Phthalate	E,A
UJ	Pesticides	4804.01	UANG-CW1	Aldrin	J
UJ	Pesticides	4804.01	UANG-CW1	Alpha-BHC	J
UJ	Pesticides	4804.01	UANG-CW1	Beta-BHC	J
UJ	Pesticides	4804.01	UANG-CW1	Delta-BHC	J
UJ	Pesticides	4804.01	UANG-CW1	Gamma-BHC	J
UJ	Pesticides	4804.01	UANG-CW1	Chlordane	J
UJ	Pesticides	4804.01	UANG-CW1	4,4'-DDD	J
UJ	Pesticides	4804.01	UANG-CW1	4,4-DDE	J
UJ	Pesticides	4804.01	UANG-CW1	4,4-DDT	J
UJ	Pesticides	4804.01	UANG-CW1	Dieldrin	J
UJ	Pesticides	4804.01	UANG-CW1	Endosulfan I	J
UJ	Pesticides	4804.01	UANG-CW1	Endosulfan II	J
UJ	Pesticides	4804.01	UANG-CW1	Endosulfan Sulfate	J
UJ	Pesticides	4804.01	UANG-CW1	Endrin	J
UJ	Pesticides	4804.01	UANG-CW1	Heptachlor	J
UJ	Pesticides	4804.01	UANG-CW1	Heptachlor Epoxide	J
UJ	Pesticides	4804.01	UANG-CW1	Endrin aldehyde	J
UJ	Pesticides	4804.01	UANG-CW1	Methoxychlor	J
UJ	Pesticides	4804.01	UANG-CW1	Toxaphene	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1016	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1221	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1232	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1242	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1248	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1254	J
UJ	PCBs	4804.01	UANG-CW1	PCB_1260	J
UJ	Metals	4804.02	UANG-CW2	Antimony	E
J	Metals	4804.02	UANG-CW2	Arsenic	D,F
UJ	Metals	4804.02	UANG-CW2	Chromium	E,A
J	Metals	4804.02	UANG-CW2	Copper	A
J	Metals	4804.02	UANG-CW2	Lead	D
UJ	Metals	4804.02	UANG-CW2	Mercury	E
UJ	Metals	4804.02	UANG-CW2	Nickel	E
UJ	Metals	4804.02	UANG-CW2	Selenium	D,H

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Metals	4804.02	UANG-CW2	Thallium	D,H
UJ	Metals	4804.02	UANG-CW2	Zinc	E,A
UJ	VOCs	4804.02	UANG-CW2	Benzyl Chloride	C
UJ	VOCs	4804.02	UANG-CW2	Bromoform	C,B
UJ	VOCs	4804.02	UANG-CW2	Dibromochloromethane	C
UJ	VOCs	4804.02	UANG-CW2	Dichlorodifluoromethane	C
UJ	VOCs	4804.02	UANG-CW2	1,3-Dichloropropene	C
J	SVOCs	4804.02	UANG-CW2	2-Methylnapthalene	A
UJ	SVOCs	4804.02	UANG-CW2	3-Nitroaniline	C
UJ	SVOCs	4804.02	UANG-CW2	3,3'-Dichlorobenzidine	C
J	Metals	4804.03	UANG-CW3	Antimony	E,A
J	Metals	4804.03	UANG-CW3	Arsenic	D,F
UJ	Metals	4804.03	UANG-CW3	Cadmium	A
UJ	Metals	4804.03	UANG-CW3	Chromium	E,A
UJ	Metals	4804.03	UANG-CW3	Copper	E,A
UJ	Metals	4804.03	UANG-CW3	Lead	E,D,A
UJ	Metals	4804.03	UANG-CW3	Mercury	E
UJ	Metals	4804.03	UANG-CW3	Nickel	E
J	Metals	4804.03	UANG-CW3	Selenium	D,H,A
UJ	Metals	4804.03	UANG-CW3	Thallium	D,H
UJ	Metals	4804.03	UANG-CW3	Zinc	E,A
UJ	VOCs	4804.03	UANG-CW3	Benzyl Chloride	C
UJ	VOCs	4804.03	UANG-CW3	Bromoform	B,C
UJ	VOCs	4804.03	UANG-CW3	Dibromochloromethane	C
UJ	VOCs	4804.03	UANG-CW3	Dichlorodifluoromethane	C
UJ	VOCs	4804.03	UANG-CW3	1,3-Dichloropropene	C
J	SVOCs	4804.03	UANG-CW3	Phenol	A
J	SVOCs	4804.03	UANG-CW3	1,3-Dichlorobenzene	A
J	SVOCs	4804.03	UANG-CW3	Napthalene	A
J	SVOCs	4804.03	UANG-CW3	4-Methylnapthalene	A
UJ	SVOCs	4804.03	UANG-CW3	Hexachlorocyclopentadiene	C
UJ	SVOCs	4804.03	UANG-CW3	Hexachlorobenzene	C
UJ	SVOCs	4804.03	UANG-CW3	3,3'-Dichlorobenzidine	C
J	SVOCs	4804.03	UANG-CW3	bis (2-Ethylhexyl) Phthalate	E,A
UJ	Pesticides	4804.03	UANG-CW3	Beta-BHC	C
UJ	Pesticides	4804.03	UANG-CW3	Gamma-BHC	C
UJ	Pesticides	4804.03	UANG-CW3	Chlordane	C
UJ	Pesticides	4804.03	UANG-CW3	4,4-DDE	C
UJ	Pesticides	4804.03	UANG-CW3	4,4-DDT	C
J	Pesticides	4804.03	UANG-CW3	Dieldrin	C
UJ	Pesticides	4804.03	UANG-CW3	Endosulfan I	C
UJ	Pesticides	4804.03	UANG-CW3	Endrin	C
UJ	Pesticides	4804.03	UANG-CW3	Heptachlor Epoxide	C
UJ	Pesticides	4804.03	UANG-CW3	Methoxychlor	C
UJ	Metals	4804.05	UANG-CW3-EQR	Antimony	E
UJ	Metals	4804.05	UANG-CW3-EQR	Arsenic	D,F

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	Metals	4804.05	UANG-CW3-EQR	Cadmium	E,A
UJ	Metals	4804.05	UANG-CW3-EQR	Copper	E,D,A
UJ	Metals	4804.05	UANG-CW3-EQR	Lead	E
UJ	Metals	4804.05	UANG-CW3-EQR	Mercury	E
UJ	Metals	4804.05	UANG-CW3-EQR	Nickel	D
UJ	Metals	4804.05	UANG-CW3-EQR	Selenium	D
UJ	Metals	4804.05	UANG-CW3-EQR	Thallium	A
UJ	Metals	4804.05	UANG-CW3-EQR	Zinc	B
UJ	Pesticides	4804.05	UANG-CW3-EQR	Heptachlor Epoxide	C
UJ	VOCs	4804.05	UANG-CW3-EQR	Benzyl Chloride	B,C
UJ	VOCs	4804.05	UANG-CW3-EQR	Bromoform	C
UJ	VOCs	4804.05	UANG-CW3-EQR	Dibromochloromethane	C
UJ	VOCs	4804.05	UANG-CW3-EQR	Dichlorodifluoromethane	C
UJ	VOCs	4804.05	UANG-CW3-EQR	1,3-Dichloropropene	C
UJ	SVOCs	4804.05	UANG-CW3-EQR	Hexachlorocyclopentadiene	C
UJ	SVOCs	4804.05	UANG-CW3-EQR	Hexachlorobenzene	C
UJ	SVOCs	4804.05	UANG-CW3-EQR	3,3'-Dichlorobenzidine	C
J	Metals	4804.06	UANG-CW4	Antimony	E,A
J	Metals	4804.06	UANG-CW4	Arsenic	D,F
UJ	Metals	4804.06	UANG-CW4	Chromium	E,A
J	Metals	4804.06	UANG-CW4	Copper	A
UJ	Metals	4804.06	UANG-CW4	Lead	E,D
UJ	Metals	4804.06	UANG-CW4	Mercury	E
UJ	Metals	4804.06	UANG-CW4	Nickel	E
J	Metals	4804.06	UANG-CW4	Selenium	D,A
UJ	Metals	4804.06	UANG-CW4	Thallium	D,H
UJ	Metals	4804.06	UANG-CW4	Zinc	E,A
UJ	VOCs	4804.06	UANG-CW4	Benzyl Chloride	C
UJ	VOCs	4804.06	UANG-CW4	Bromoform	B,C
UJ	VOCs	4804.06	UANG-CW4	Dibromochloromethane	C
UJ	VOCs	4804.06	UANG-CW4	Dichlorodifluoromethane	C
UJ	VOCs	4804.06	UANG-CW4	1,3-Dichloropropene	C
J	SVOCs	4804.06	UANG-CW4	Phenol	A
J	SVOCs	4804.06	UANG-CW4	1,3-Dichlorobenzene	A
J	SVOCs	4804.06	UANG-CW4	Napthalene	A
J	SVOCs	4804.06	UANG-CW4	2-Methylnapthalene	A
UJ	SVOCs	4804.06	UANG-CW4	Hexachlorocyclopentadiene	C
UJ	SVOCs	4804.06	UANG-CW4	Hexachlorobenzene	C
UJ	SVOCs	4804.06	UANG-CW4	3,3'-Dichlorobenzidine	C
J	Pesticides	4804.06	UANG-CW4	Aldrin	J
UJ	Pesticides	4804.06	UANG-CW4	Alpha-BHC	J
UJ	Pesticides	4804.06	UANG-CW4	Beta-BHC	J
UJ	Pesticides	4804.06	UANG-CW4	Delta-BHC	J
UJ	Pesticides	4804.06	UANG-CW4	Gamma-BHC	J
UJ	Pesticides	4804.06	UANG-CW4	Chlordane	J
UJ	Pesticides	4804.06	UANG-CW4	4,4'-DDD	J

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Pesticides	4804.06	UANG-CW4	4,4-DDE	J
UJ	Pesticides	4804.06	UANG-CW4	4,4-DDT	J
J	Pesticides	4804.06	UANG-CW4	Dieldrin	J
UJ	Pesticides	4804.06	UANG-CW4	Endosulfan I	J
UJ	Pesticides	4804.06	UANG-CW4	Endosulfan II	J
UJ	Pesticides	4804.06	UANG-CW4	Endosulfan Sulfate	J
UJ	Pesticides	4804.06	UANG-CW4	Endrin	J
UJ	Pesticides	4804.06	UANG-CW4	Heptachlor	J
UJ	Pesticides	4804.06	UANG-CW4	Heptachlor Epoxide	J
UJ	Pesticides	4804.06	UANG-CW4	Endrin aldehyde	J
UJ	Pesticides	4804.06	UANG-CW4	Methoxychlor	J
UJ	Pesticides	4804.06	UANG-CW4	Toxaphene	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1016	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1221	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1232	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1242	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1248	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1254	J
UJ	PCBs	4804.06	UANG-CW4	PCB_1260	J
J	Metals	4779.08	UANG-S2-MW1	Arsenic	D
UJ	Metals	4779.08	UANG-S2-MW1	Cadmium	E,A
UJ	Metals	4779.08	UANG-S2-MW1	Chromium	E,A
J	Metals	4779.08	UANG-S2-MW1	Copper	A
UJ	Metals	4779.08	UANG-S2-MW1	Mercury	E
UJ	Metals	4779.08	UANG-S2-MW1	Nickel	E
J	Metals	4779.08	UANG-S2-MW1	Selenium	D,H,A
UJ	Metals	4779.08	UANG-S2-MW1	Thallium	H,A
UJ	Metals	4779.08	UANG-S2-MW1	Zinc	E,A
UJ	VOCs	4779.08	UANG-S2-MW1	Chloromethane	C
UJ	VOCs	4779.08	UANG-S2-MW1	Dichlorodifluoromethane	C
J	VOCs	4779.08	UANG-S2-MW1	1,1-Dichloroethane	A
UJ	VOCs	4779.08	UANG-S2-MW1	1,2-Dichloropropane	C
J	Metals	4595.07	UANG-S2-SB1 (0.5-2.5)	Arsenic	F
UJ	Metals	4595.07	UANG-S2-SB1 (0.5-2.5)	Cadmium	D
J	Metals	4595.07	UANG-S2-SB1 (0.5-2.5)	Chromium	G
UJ	Metals	4595.07	UANG-S2-SB1 (0.5-2.5)	Mercury	E
UJ	Metals	4595.07	UANG-S2-SB1 (0.5-2.5)	Selenium	D,H
J	Metals	4595.07	UANG-S2-SB1 (0.5-2.5)	Zinc	G
J	SVOCs	4595.07	UANG-S2-SB1 (0.5-2.5)	bis (2-Ethylhexyl) Phthalate	A
J	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Arsenic	F
UJ	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Cadmium	D
J	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Chromium	G
UJ	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Mercury	E
UJ	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Selenium	D,H
J	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Thallium	H,A,D
J	Metals	4595.06	UANG-S2-SB1 (5-7.5)	Zinc	G

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	4-Nitroaniline	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	Pyrene	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	bis (2-Chloroisopropyl) Ether	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	2-Nitroaniline	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	3-Nitroaniline	C
UJ	SVOCs	4595.06	UANG-S2-SB1 (5-7.5)	4-Nitrophenol	C
J	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Arsenic	F
J	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Beryllium	A
UJ	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Cadmium	D
J	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Chromium	G
UJ	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Mercury	E
UJ	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Selenium	D,H
J	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Thallium	D,H,A
J	Metals	4595.04	UANG-S2-SB2 (2.5-4.5)	Zinc	G
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Bromomethane	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Chloroethane	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Trichlorofluoromethane	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	1,1-Dichloroethane	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	1,2-Dichloroethene (Total)	C
J	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Chloroform	A
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	1,1,1-Trichloroethane	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Carbon Tetrachloride	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Bromodichloromethane	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Bromoform	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	1,3-Dichlorobenzene	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	1,4-Dichlorobenzene	C
UJ	VOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	1,2-Dichlorobenzene	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	bis (2-Chloroisopropyl) Ether	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	2-Nitroaniline	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	3-Nitroaniline	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	4-Nitrophenol	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	4-Nitroaniline	C
UJ	SVOCs	4595.04	UANG-S2-SB2 (2.5-4.5)	Pyrene	C
J	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Arsenic	F
J	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Beryllium	A
UJ	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Cadmium	D
J	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Chromium	G
J	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Lead	H
UJ	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Mercury	E
UJ	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Selenium	D,H
J	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Thallium	D,H,A
J	Metals	4595.05	UANG-S2-SB2 (4.5-6.5)	Zinc	G

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	VOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	1,2-Dichloroethene (Total)	A
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	2-Nitroaniline	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	3-Nitroaniline	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	4-Nitrophenol	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	Pyrene	C
UJ	SVOCs	4595.05	UANG-S2-SB2 (4.5-6.5)	3-3'-Dichlorobenzidine	C
J	Metals	4595.01	UANG-S2-SB3 (2.5-4.5)	Arsenic	F
UJ	Metals	4595.01	UANG-S2-SB3 (2.5-4.5)	Cadmium	D
J	Metals	4595.01	UANG-S2-SB3 (2.5-4.5)	Chromium	G
UJ	Metals	4595.01	UANG-S2-SB3 (2.5-4.5)	Mercury	E
UJ	Metals	4595.01	UANG-S2-SB3 (2.5-4.5)	Selenium	D,H
J	Metals	4595.01	UANG-S2-SB3 (2.5-4.5)	Zinc	G
UJ	VOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Bromomethane	C
UJ	VOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Acetone	C
UJ	VOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	1,1-Dichloroethane	C
J	VOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Toluene	A
UJ	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Benzyl Alcohol	C
UJ	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Benzoic Acid	B,C
UJ	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	3-Nitroaniline	C
UJ	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	4-Nitroaniline	C
J	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Phenanthrene	A
J	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Fluoranthene	A
J	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	Pyrene	A
UJ	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	3,3'-Dichlorbenzidine	C
UJ	SVOCs	4595.01	UANG-S2-SB3 (2.5-4.5)	bis (2-Ethylhexyl) Phthalate	C
J	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Arsenic	F,A
UJ	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Cadmium	D
J	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Chromium	G
UJ	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Mercury	E
UJ	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Selenium	D,H
J	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Thallium	D,H,A
J	Metals	4595.02	UANG-S2-SB3 (4.5-6.5)	Zinc	G
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Bromomethane	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Chloroethane	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Trichlorofluoromethane	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	1,2-Dichloroethene (Total)	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	1,2-Dichloroethane	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	1,1,1-Trichloroethane	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Carbon Tetrachloride	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Bromodichloromethane	C
J	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Benzene	A
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Bromoform	C
J	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Toluene	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Ethylbenzene	J
J	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Total Xylenes	J
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	1,3-Dichlorobenzene	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	1,4-Dichlorobenzene	C
UJ	VOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	1,2-Dichlorobenzene	C
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	2-Nitroaniline	C
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	3-Nitroaniline	C
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	4-Nitrophenol	C
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	4-Nitroaniline	C
J	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Phenanthrene	A
UJ	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	Pyrene	C
J	SVOCs	4595.02	UANG-S2-SB3 (4.5-6.5)	bis (2-Ethylhexyl) Phthalate	A
J	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Arsenic	F
J	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Beryllium	A
UJ	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Cadmium	D
J	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Chromium	G
UJ	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Mercury	E
UJ	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Selenium	D,H
J	Metals	4595.03	UANG-S2-SB3 (6.5-8.5)	Zinc	G
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Bromomethane	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Chloroethane	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Trichlorofluoromethane	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	1,1-Dichloroethane	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	1,2-Dichloroethene (Total)	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	1,1,1-Trichloroethane	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Carbon Tetrachloride	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Bromodichloromethane	C
J	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Benzene	A
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Bromoform	C
J	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Toluene	A
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	1,3-Dichlorobenzene	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	1,4-Dichlorobenzene	C
UJ	VOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	1,2-Dichlorobenzene	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	2-Nitroaniline	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	3-Nitroaniline	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	4-Nitrophenol	C
J	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Fluorene	A
J	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Phenanthrene	A
J	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Fluoranthene	A
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Pyrene	C
UJ	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	3-3'-Dichlorobenzidine	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	Chrysene	A
J	SVOCs	4595.03	UANG-S2-SB3 (6.5-8.5)	bis (2-Ethylhexyl) Phthalate	A
UJ	SVOCs	4683.1	UANG-S2-SB4 (4.5-6.5)	Hexachlorocyclopentadiene	C
UJ	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Antimony	D
J	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Arsenic	D
J	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Cadmium	A
J	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Chromium	G
J	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Lead	D
UJ	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Mercury	E
UJ	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Thallium	D,H
J	Metals	4705.09	UANG-S2-SB5 (6.5-8.5)	Zinc	G
UJ	SVOCs	4705.09	UANG-S2-SB5 (6.5-8.5)	Phenol	C
UJ	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Antimony	E,D,A
J	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Arsenic	D
J	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Beryllium	A
J	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Chromium	G
J	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Lead	D,H
UJ	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Mercury	E
UJ	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Thallium	D,H
J	Metals	4705.10	UANG-S2-SB6 (6.5-8.5)	Zinc	G
UJ	SVOCs	4705.10	UANG-S2-SB6 (6.5-8.5)	Phenol	C
J	VOCs	4779.10	UANG-S3-MW1	Toluene	A
J	VOCs	4779.10	UANG-S3-MW1	1,3-Dichlorobenzene	A
J	SVOCs	4779.10	UANG-S3-MW1	1,4-Dichlorobenzene	A
J	SVOCs	4779.10	UANG-S3-MW1	1,2-Dichlorobenzene	A
J	VOCs	4779.10	UANG-S3-MW1	1,3-Dichlorobenzene	A
UJ	VOCs	4779.10	UANG-S3-MW1	Dichlorodifluoromethane	C
J	SVOCs	4779.11	UANG-S3-MW2	1,4-Dichlorobenzene	A
J	SVOCs	4779.11	UANG-S3-MW2	1,2-Dichlorobenzene	A
J	VOCs	4779.11	UANG-S3-MW2	Ethylbenzene	A
J	VOCs	4779.11	UANG-S3-MW2	Toluene	A
J	VOCs	4779.11	UANG-S3-MW2	Chlorobenzene	A
J	VOCs	4779.11	UANG-S3-MW2	1,2-Dichlorobenzene	A
J	VOCs	4779.11	UANG-S3-MW2	1,4-Dichlorobenzene	A
UJ	VOCs	4779.11	UANG-S3-MW2	Dichlorodifluoromethane	C
J	VOCs	4779.09	UANG-S3-MW3	Toluene	A
J	VOCs	4779.09	UANG-S3-MW3	1,3-Dichlorobenzene	A
J	SVOCs	4779.09	UANG-S3-MW3	Phenol	A
J	SVOCs	4779.09	UANG-S3-MW3	4-Methylphenol	A
J	VOCs	4779.09	UANG-S3-MW3	1,3-Dichlorobenzene	A
UJ	VOCs	4779.09	UANG-S3-MW3	Dichlorodifluoromethane	C
UJ	SVOCs	4633.09	UANG-S3-SS1	Benzyl Alcohol	B
UJ	SVOCs	4633.09	UANG-S3-SS1	3-Nitroaniline	B
J	SVOCs	4633.10	UANG-S3-SS2	Pyrene	A
J	SVOCs	4633.10	UANG-S3-SS2	Chrysene	A
J	SVOCs	4633.10	UANG-S3-SS2	bis(2-ethylhexyl) Phthalate	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4633.10	UANG-S3-SS2	Benzyl Alcohol	B
J	SVOCs	4683.08	UANG-S3-SB1 (4-6)	N-Nirosodiphenylamine	A
UJ	SVOCs	4683.08	UANG-S3-SB1 (4-6)	Hexachlorocyclopentadiene	B
UJ	SVOCs	4683.09	UANG-S3-SB1 (6-8)	Hexachlorocyclopentadiene	B
J	SVOCs	4683.07	UANG-S3-SB3 (6-8)	bis(2-ethylhexyl) Phthalate	A
UJ	SVOCs	4683.07	UANG-S3-SB3 (6-8)	Hexachlorocyclopentadiene	B
UJ	SVOCs	4705.11	UANG-S3-SB5 (4-6)	Phenol	C
UJ	Metals	4705.11	UANG-S3-SB5 (4-6)	Antimony	E,D,A
J	Metals	4705.11	UANG-S3-SB5 (4-6)	Arsenic	D
J	Metals	4705.11	UANG-S3-SB5 (4-6)	Beryllium	A
J	Metals	4705.11	UANG-S3-SB5 (4-6)	Chromium	G
J	Metals	4705.11	UANG-S3-SB5 (4-6)	Lead	D,H
UJ	Metals	4705.11	UANG-S3-SB5 (4-6)	Mercury	E
UJ	Metals	4705.11	UANG-S3-SB5 (4-6)	Thallium	D,H
J	Metals	4705.11	UANG-S3-SB5 (4-6)	Zinc	G
J	SVOCs	4642.06	UANG-S3-SS4	Pyrene	A
J	SVOCs	4642.06	UANG-S3-SS4	Chrysene	A
J	SVOCs	4642.06	UANG-S3-SS4	bis(2-ethylhexyl) Phthalate	A
UJ	SVOCs	4642.06	UANG-S3-SS4	Hexachlorocyclopentadiene	B
UJ	SVOCs	4642.07	UANG-S3-SS5	4-Nitroaniline	B
J	SVOCs	4642.07	UANG-S3-SS5	bis(2-ethylhexyl) Phthalate	A
UJ	SVOCs	4642.07	UANG-S3-SS5	3-Nitroaniline	B
UJ	SVOCs	4642.07	UANG-S3-SS5	2,4-Dinitrophenol	B
J	SVOCs	4642.08	UANG-S3-SS6	Diethylphthalate	A
J	SVOCs	4642.08	UANG-S3-SS6	Pyrene	A
J	SVOCs	4642.08	UANG-S3-SS6	Chrysene	A
UJ	SVOCs	4642.08	UANG-S3-SS6	3-Nitroanaline	B
UJ	VOCs	4781.03	UANG-S4-MW1	Chloromethane	C
UJ	VOCs	4781.03	UANG-S4-MW1	Dichlorodifluoromethane	C
UJ	VOCs	4781.03	UANG-S4-MW1	1,2-Dichloropropane	C
J	Metals	4781.03	UANG-S4-MW1	Arsenic	D
UJ	Metals	4781.03	UANG-S4-MW1	Chromium	E,A
UJ	Metals	4781.03	UANG-S4-MW1	Copper	E,A
UJ	Metals	4781.03	UANG-S4-MW1	Lead	E,A
UJ	Metals	4781.03	UANG-S4-MW1	Mercury	E
UJ	Metals	4781.03	UANG-S4-MW1	Nickel	E
UJ	Metals	4781.03	UANG-S4-MW1	Selenium	D,H
UJ	Metals	4781.03	UANG-S4-MW1	Zinc	E,A
J	VOCs	4781.03	UANG-S4-MW1	Toluene	A
J	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Arsenic	F
J	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Beryllium	A
UJ	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Cadmium	D
J	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Chromium	G
UJ	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Mercury	E
UJ	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Selenium	D,H
J	Metals	4601-08	UANG-S4-SB1 (2.5-4.5)	Zinc	G

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	bis (2-Chloroisopropyl) Ether	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	2-Nitroaniline	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	3-Nitroaniline	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	4-Nitrophenol	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	4-Nitroaniline	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	Pyrene	C
UJ	SVOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	3,3'-Dichlorobenzidine	C
UJ	VOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	Chloromethane	C
J	VOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	Methylene Chloride	A
J	VOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	Toluene	A
J	VOCs	4601-08	UANG-S4-SB1 (2.5-4.5)	Total Xylenes	A
J	Metals	4601.09	UANG-S4-SB1 (6.5-9)	Arsenic	F
UJ	Metals	4601.09	UANG-S4-SB1 (6.5-9)	Cadmium	D
J	Metals	4601.09	UANG-S4-SB1 (6.5-9)	Chromium	G
UJ	Metals	4601.09	UANG-S4-SB1 (6.5-9)	Mercury	E
UJ	Metals	4601.09	UANG-S4-SB1 (6.5-9)	Selenium	D,H
J	Metals	4601.09	UANG-S4-SB1 (6.5-9)	Zinc	G
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	bis (2-Chloroisopropyl) Ether	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	bis-(2-Chloroethoxy) methane	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	2-Nitroaniline	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	3-Nitroaniline	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	4-Nitrophenol	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	4-Nitroaniline	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	Pyrene	C
UJ	SVOCs	4601.09	UANG-S4-SB1 (6.5-9)	3,3'-Dichlorobenzidine	C
UJ	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Antimony	D
J	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Arsenic	D
J	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Cadmium	D
J	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Mercury	E,A
UJ	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Selenium	D,H
UJ	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Thallium	D,H
J	Metals	4608.03	UANG-S4-SB2 (2.5-4.5)	Zinc	G
UJ	VOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	Chloromethane	C
J	VOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	Methylene Chloride	A
J	VOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	2-Butanone	A
J	VOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	Toluene	A
J	VOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	Ethylbenzene	J
J	VOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	Total Xylenes	J
J	SVOCs	4608.03	UANG-S4-SB2 (2.5-4.5)	2,4-Dimethylphenol	A
UJ	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Antimony	D

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Arsenic	D,A
J	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Beryllium	A
UJ	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Cadmium	D
UJ	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Mercury	E
UJ	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Selenium	D,H
UJ	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Thallium	D,H
J	Metals	4608.04	UANG-S4-SB2 (6.5-9)	Zinc	G
UJ	VOCs	4608.04	UANG-S4-SB2 (6.5-9)	Chloromethane	C
J	VOCs	4608.04	UANG-S4-SB2 (6.5-9)	Toluene	A
UJ	SVOCs	4608.04	UANG-S4-SB2 (6.5-9)	Indeno (1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.04	UANG-S4-SB2 (6.5-9)	Dibenz (a,h) Anthracene	B
UJ	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Antimony	D
J	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Arsenic	D
J	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Beryllium	A
UJ	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Cadmium	D
UJ	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Mercury	E
UJ	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Selenium	D,H
UJ	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Thallium	D,H
J	Metals	4608.05	UANG-S4-SB3 (2.5-4.5)	Zinc	G
UJ	VOCs	4608.05	UANG-S4-SB3 (2.5-4.5)	Chloromethane	C
J	VOCs	4608.05	UANG-S4-SB3 (2.5-4.5)	Toluene	A
J	SVOCs	4608.05	UANG-S4-SB3 (2.5-4.5)	Di-n-Butylphthalate	A
UJ	SVOCs	4608.05	UANG-S4-SB3 (2.5-4.5)	Indeno (1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.05	UANG-S4-SB3 (2.5-4.5)	Dibenz (a,h) Anthracene	B
UJ	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Antimony	D
J	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Arsenic	D
UJ	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Cadmium	D
UJ	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Mercury	E
UJ	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Selenium	D,H
UJ	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Thallium	D,H
J	Metals	4608.06	UANG-S4-SB3 (6.5-9)	Zinc	G
UJ	VOCs	4608.06	UANG-S4-SB3 (6.5-9)	Chloromethane	C
J	VOCs	4608.06	UANG-S4-SB3 (6.5-9)	Toluene	A
UJ	SVOCs	4608.06	UANG-S4-SB3 (6.5-9)	Indeno (1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.06	UANG-S4-SB3 (6.5-9)	Dibenz (a,h) Anthracene	B
UJ	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Antimony	D
J	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Arsenic	D
J	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Beryllium	A
J	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Cadmium	D,A
UJ	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Mercury	E
UJ	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Selenium	D,H
J	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Thallium	D,H,A
J	Metals	4608.07	UANG-S4-SB4 (2.5-4.5)	Zinc	G
UJ	VOCs	4608.07	UANG-S4-SB4 (2.5-4.5)	Chloromethane	C
J	SVOCs	4608.07	UANG-S4-SB4 (2.5-4.5)	Di-n-Butylphthalate	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4608.07	UANG-S4-SB4 (2.5-4.5)	Indeno (1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.07	UANG-S4-SB4 (2.5-4.5)	Dibenz (a,h) Anthracene	B
UJ	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Antimony	D
J	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Arsenic	D
J	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Beryllium	A
UJ	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Cadmium	D
UJ	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Mercury	E
UJ	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Selenium	D,H
UJ	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Thallium	D,H
J	Metals	4608.08	UANG-S4-SB4 (6.5-9)	Zinc	G
UJ	VOCs	4608.08	UANG-S4-SB4 (6.5-9)	Chloromethane	C
J	VOCs	4608.08	UANG-S4-SB4 (6.5-9)	2-Butanone	A
J	VOCs	4608.08	UANG-S4-SB4 (6.5-9)	Toluene	A
UJ	SVOCs	4608.08	UANG-S4-SB4 (6.5-9)	Indeno (1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.08	UANG-S4-SB4 (6.5-9)	Dibenz (a,h) Anthracene	B
UJ	Metals	4608.09	UANG-S4-SB4 (9-11)	Antimony	D
J	Metals	4608.09	UANG-S4-SB4 (9-11)	Arsenic	D,A
J	Metals	4608.09	UANG-S4-SB4 (9-11)	Beryllium	A
UJ	Metals	4608.09	UANG-S4-SB4 (9-11)	Cadmium	D
UJ	Metals	4608.09	UANG-S4-SB4 (9-11)	Mercury	E
UJ	Metals	4608.09	UANG-S4-SB4 (9-11)	Selenium	D,H
UJ	Metals	4608.09	UANG-S4-SB4 (9-11)	Thallium	D
J	Metals	4608.09	UANG-S4-SB4 (9-11)	Zinc	G
UJ	VOCs	4608.09	UANG-S4-SB4 (9-11)	Chloromethane	C
J	VOCs	4608.09	UANG-S4-SB4 (9-11)	Methylene Chloride	A
J	VOCs	4608.09	UANG-S4-SB4 (9-11)	Carbon Disulfide	A
J	VOCs	4608.09	UANG-S4-SB4 (9-11)	Toluene	A
UJ	SVOCs	4608.09	UANG-S4-SB4 (9-11)	Indeno (1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.09	UANG-S4-SB4 (9-11)	Dibenz (a,h) Anthracene	B
UJ	Metals	4662.01	UANG-S4-SB5 (5-7)	Antimony	D
J	Metals	4662.01	UANG-S4-SB5 (5-7)	Arsenic	D
J	Metals	4662.01	UANG-S4-SB5 (5-7)	Beryllium	A
UJ	Metals	4662.01	UANG-S4-SB5 (5-7)	Cadmium	D
UJ	Metals	4662.01	UANG-S4-SB5 (5-7)	Mercury	E
UJ	Metals	4662.01	UANG-S4-SB5 (5-7)	Selenium	D,H
UJ	Metals	4662.01	UANG-S4-SB5 (5-7)	Thallium	D,H
J	Metals	4662.01	UANG-S4-SB5 (5-7)	Zinc	G
UJ	SVOCs	4662.01	UANG-S4-SB5 (5-7)	N-Nitroso-Dimethylamine	C
J	Metals	4662.02	UANG-S4-SB5 (7-9)	Antimony	D,A
J	Metals	4662.02	UANG-S4-SB5 (7-9)	Arsenic	D
J	Metals	4662.02	UANG-S4-SB5 (7-9)	Beryllium	A
UJ	Metals	4662.02	UANG-S4-SB5 (7-9)	Cadmium	D
UJ	Metals	4662.02	UANG-S4-SB5 (7-9)	Mercury	E
UJ	Metals	4662.02	UANG-S4-SB5 (7-9)	Selenium	D,H
UJ	Metals	4662.02	UANG-S4-SB5 (7-9)	Thallium	D,H

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	Metals	4662.02	UANG-S4-SB5 (7-9)	Zinc	G
UJ	SVOCs	4662.02	UANG-S4-SB5 (7-9)	N-Nitroso-Dimethylamine	C
UJ	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Antimony	D
J	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Arsenic	D
UJ	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Cadmium	D
UJ	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Mercury	E
UJ	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Selenium	D,H
UJ	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Thallium	D,H
J	Metals	4662.04	UANG-S4-SB5 (2.5-4.5)	Zinc	G
UJ	SVOCs	4662.04	UANG-S4-SB5 (2.5-4.5)	N-Nitroso-Dimethylamine	C
UJ	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Antimony	D
J	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Arsenic	D
J	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Beryllium	A
UJ	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Cadmium	D
UJ	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Mercury	E
UJ	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Selenium	D,H
UJ	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Thallium	D,H
J	Metals	4662.05	UANG-S4-SB5 (6.5-8.5)	Zinc	G
UJ	SVOCs	4662.05	UANG-S4-SB5 (2.5-4.5)	N-Nitroso-Dimethylamine	C
UJ	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Antimony	D
J	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Arsenic	D
J	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Beryllium	A
UJ	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Cadmium	D
UJ	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Mercury	E
UJ	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Selenium	D,H
UJ	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Thallium	D,H
J	Metals	4662.03	UANG-S4-SB7 (4.5-6.5)	Zinc	G
UJ	SVOCs	4662.03	UANG-S4-SB7 (4.5-6.5)	N-Nitroso-Dimethylamine	C
J	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Antimony	D,A
J	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Arsenic	D
J	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Chromium	G
J	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Lead	D,H
UJ	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Mercury	E
UJ	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Thallium	D
J	Metals	4705.01	UANG-S4-SB8 (0.5-2.5)	Zinc	G
UJ	SVOCs	4705.01	UANG-S4-SB8 (0.5-2.5)	Hexachlorocyclopentadiene	B
UJ	SVOCs	4705.01	UANG-S4-SB8 (0.5-2.5)	2,4-Dinitrophenol	C
UJ	SVOCs	4705.01	UANG-S4-SB8 (0.5-2.5)	Fluoranthene	C
UJ	SVOCs	4705.01	UANG-S4-SB8 (0.5-2.5)	Pyrene	C
UJ	SVOCs	4705.01	UANG-S4-SB8 (0.5-2.5)	3,3'-Dichlorobenzidine	C
UJ	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Antimony	E,D
J	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Arsenic	D
J	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Beryllium	A
J	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Cadmium	A
J	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Chromium	G

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Lead	D
UJ	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Mercury	E
UJ	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Thallium	D
J	Metals	4705.02	UANG-S4-SB8 (4.5-6.5)	Zinc	G
UJ	SVOCs	4705.02	UANG-S4-SB8 (4.5-6.5)	Hexachlorocyclopentadiene	B,C
UJ	SVOCs	4705.02	UANG-S4-SB8 (4.5-6.5)	2,4-Dinitrophenol	C
UJ	SVOCs	4705.02	UANG-S4-SB8 (4.5-6.5)	Fluoranthene	C
UJ	SVOCs	4705.02	UANG-S4-SB8 (4.5-6.5)	Pyrene	C
UJ	SVOCs	4705.02	UANG-S4-SB8 (4.5-6.5)	3,3'-Dichlorobenzidine	C
UJ	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Antimony	D,A
J	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Arsenic	D
J	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Beryllium	A
J	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Cadmium	A
J	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Chromium	G
J	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Lead	D
UJ	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Mercury	E
UJ	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Thallium	D,H
J	Metals	4705.03	UANG-S4-SB9 (2.5-4.5)	Zinc	G
UJ	SVOCs	4705.03	UANG-S4-SB9 (2.5-4.5)	Hexachlorocyclopentadiene	B,C
UJ	SVOCs	4705.03	UANG-S4-SB9 (2.5-4.5)	2,4-Dinitrophenol	C
UJ	SVOCs	4705.03	UANG-S4-SB9 (2.5-4.5)	Fluoranthene	C
UJ	SVOCs	4705.03	UANG-S4-SB9 (2.5-4.5)	Pyrene	C
UJ	SVOCs	4705.03	UANG-S4-SB9 (2.5-4.5)	3,3'-Dichlorobenzidine	C
UJ	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Antimony	E,D,A
J	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Arsenic	D
J	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Beryllium	A
J	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Cadmium	A
J	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Chromium	G
J	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Lead	H,D
UJ	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Mercury	E
UJ	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Thallium	D,H
J	Metals	4705.04	UANG-S4-SB9 (4.5-6.5)	Zinc	G
UJ	SVOCs	4705.04	UANG-S4-SB9 (4.5-6.5)	Phenol	C
UJ	VOCs	4608.10	UANG-S5-SB1 (0-2)	Chloromethane	C
J	VOCs	4608.10	UANG-S5-SB1 (0-2)	Methylene Chloride	A
UJ	SVOCs	4608.10	UANG-S5-SB1 (0-2)	bis(2-ethylhexyl) Phthalate	C
	SVOCs	4608.10	UANG-S5-SB1 (0-2)	Pyrene	C
	VOCs	4608.10	UANG-S5-SB1 (0-2)	Total Xylenes	A
UJ	VOCs	4608.11	UANG-S5-SB1 (6-8.5)	Chloromethane	C
J	VOCs	4608.11	UANG-S5-SB1 (6-8.5)	Methylene Chloride	A
UJ	SVOCs	4608.11	UANG-S5-SB1 (6-8.5)	Ideno(1,2,3-cd) Pyrene	B
UJ	SVOCs	4608.11	UANG-S5-SB1 (6-8.5)	Dibenz (a,h) Anthracene	B
J	VOCs	4624.09	UANG-S5-SB2 (2-4)	Carbon Disulfide	A
J	VOCs	4624.09	UANG-S5-SB2 (2-4)	2-Butanone	A
J	VOCs	4624.09	UANG-S5-SB2 (2-4)	4-Methyl-2-pentanone	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	VOCs	4624.09	UANG-S5-SB2 (2-4)	Total Xylenes	A
UJ	SVOCs	4624.09	UANG-S5-SB2 (2-4)	Benzyl Alcohol	C
UJ	SVOCs	4624.09	UANG-S5-SB2 (2-4)	Hexachlorobutadiene	C
UJ	SVOCs	4624.09	UANG-S5-SB2 (2-4)	3-Nitoraniline	C
UJ	SVOCs	4624.09	UANG-S5-SB2 (2-4)	4-Nitroaniline	C
UJ	SVOCs	4624.09	UANG-S5-SB2 (2-4)	Hexachlorobenzene	C
J	VOCs	4624.01	UANG-S5-SB2 (6-8.5)	Acetone	A
UJ	SVOCs	4624.01	UANG-S5-SB2 (6-8.5)	Benzyl Alcohol	C
UJ	SVOCs	4624.01	UANG-S5-SB2 (6-8.5)	3-Nitoraniline	B
UJ	SVOCs	4624.01	UANG-S5-SB2 (6-8.5)	Hexachlorobenzene	C
UJ	SVOCs	4624.01	UANG-S5-SB2 (6-8.5)	Pyrene	C
UJ	SVOCs	4624.01	UANG-S5-SB2 (6-8.5)	Di-n-octylphthalate	C
J	VOCs	4624.08	UANG-S5-SB3 (2-4)	Acetone	A
UJ	SVOCs	4624.08	UANG-S5-SB3 (2-4)	3-Nitroaniline	B
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	Phenanthrene	A
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	Fluoranthene	A
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	Pyrene	A
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	Chrysene	A
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	bis(2-ethylhexyl) Phthalate	A
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	Benzo (b) Fluoranthene	A
J	SVOCs	4624.08	UANG-S5-SB3 (2-4)	Benzo (k) Fluoranthene	A
J	VOCs	4624.02	UANG-S5-SB3 (6-8.5)	Acetone	A
J	VOCs	4624.02	UANG-S5-SB3 (6-8.5)	Toluene	A
UJ	SVOCs	4624.02	UANG-S5-SB3 (6-8.5)	Benzyl Alcohol	C
UJ	SVOCs	4624.02	UANG-S5-SB3 (6-8.5)	Hexachlorobutadiene	C
UJ	SVOCs	4624.02	UANG-S5-SB3 (6-8.5)	3-Nitroaniline	C
UJ	SVOCs	4624.02	UANG-S5-SB3 (6-8.5)	4-Nitroaniline	C
UJ	SVOCs	4624.02	UANG-S5-SB3 (6-8.5)	Hexachlorobenzene	C
J	VOCs	4624.03	UANG-S5-SB3 (8.5-11)	Acetone	A
J	VOCs	4624.03	UANG-S5-SB3 (8.5-11)	Toluene	A
UJ	SVOCs	4624.03	UANG-S5-SB3 (8.5-11)	Benzyl Alcohol	C
UJ	SVOCs	4624.03	UANG-S5-SB3 (8.5-11)	Hexachlorobutadiene	C
UJ	SVOCs	4624.03	UANG-S5-SB3 (8.5-11)	3-Nitroaniline	C
UJ	SVOCs	4624.03	UANG-S5-SB3 (8.5-11)	4-Nitroaniline	C
UJ	SVOCs	4624.03	UANG-S5-SB3 (8.5-11)	Hexachlorobenzene	C
J	SVOCs	4624.03	UANG-S5-SB3 (8.5-11)	bis(2-ethylhexyl) Phthalate	A
J	VOCs	4624.06	UANG-S5-SB4 (2-4)	Acetone	A
J	VOCs	4624.06	UANG-S5-SB4 (2-4)	Toluene	A
J	SVOCs	4624.06	UANG-S5-SB4 (2-4)	Phenanthrene	A
J	SVOCs	4624.06	UANG-S5-SB4 (2-4)	Fluoranthene	A
J	SVOCs	4624.06	UANG-S5-SB4 (2-4)	Pyrene	A
J	VOCs	4624.04	UANG-S5-SB4 (6-8.5)	Methylene Chloride	A
J	VOCs	4624.04	UANG-S5-SB4 (6-8.5)	Acetone	A
J	VOCs	4624.04	UANG-S5-SB4 (6-8.5)	Toluene	A
J	VOCs	4624.04	UANG-S5-SB4 (6-8.5)	Total Xylenes	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4624.04	UANG-S5-SB4 (6-8.5)	Benzyl Alcohol	C
UJ	SVOCs	4624.04	UANG-S5-SB4 (6-8.5)	3-Nitroaniline	B
UJ	SVOCs	4624.04	UANG-S5-SB4 (6-8.5)	Hexachlorobenzene	C
UJ	SVOCs	4624.04	UANG-S5-SB4 (6-8.5)	Pyrene	C
UJ	SVOCs	4624.04	UANG-S5-SB4 (6-8.5)	Di-n-octylphthalate	C
UJ	SVOCs	4797.07	UANG-S5-SB5 (1-3)	Pentachlorophenol	C
UJ	SVOCs	4797.08	UANG-S5-SB5 (5-7)	3-Nitroaniline	C
UJ	SVOCs	4797.08	UANG-S5-SB5 (5-7)	4-Nitroaniline	C
J	SVOCs	4797.08	UANG-S5-SB5 (5-7)	Di-n-Butylphthalate	A
UJ	SVOCs	4797.01	UANG-S5-SB6 (1-3)	Pentachlorophenol	C
UJ	SVOCs	4797.02	UANG-S5-SB6 (5-7)	Pentachlorophenol	C
J	SVOCs	4797.02	UANG-S5-SB6 (5-7)	Di-n-Butylphthalate	A
UJ	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Pentachlorophenol	C
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Phenanthrene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Di-n-Butylphthalate	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Fluoranthene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Pyrene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Chrysene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Benzo (b) Fluoranthene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Benzo(a) Pyrene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Ideno (1,2,3-cd) Pyrene	A
J	SVOCs	4797.05	UANG-S5-SB7 (1-3)	Benzo (g,h,i) Perylene	A
UJ	SVOCs	4797.06	UANG-S5-SB7 (5-7)	3-Nitroaniline	B,C
UJ	SVOCs	4797.06	UANG-S5-SB7 (5-7)	4-Nitroaniline	C
UJ	VOCs	4788.05	UANG-S5-MW1	Bromoform	B
UJ	SVOCs	4788.05	UANG-S5-MW1	4-Chloroaniline	C
UJ	SVOCs	4788.05	UANG-S5-MW1	3-Nitroaniline	C
UJ	SVOCs	4788.05	UANG-S5-MW1	4-Nitroaniline	C
UJ	SVOCs	4788.05	UANG-S5-MW1	3,3'-Dichlorobenzidiene	C
UJ	SVOCs	4788.04	UANG-S6-MW1	4-Nitroaniline	C
UJ	SVOCs	4788.04	UANG-S6-MW1	3,3'-Dichlorobenzidine	C
UJ	SVOCs	4788.04	UANG-S6-MW1	4-Chloroaniline	C
UJ	SVOCs	4788.04	UANG-S6-MW1	3-Nitroanaline	C
UJ	SVOCs	4788.06	UANG-S6-MW2	Benzoic Acid	C
UJ	SVOCs	4788.06	UANG-S6-MW2	3-Nitroanaline	C
UJ	SVOCs	4788.06	UANG-S6-MW3	4-Nitroaniline	C
UJ	SVOCs	4788.06	UANG-S6-MW3	3,3'-Dichlorobenzidine	C
UJ	SVOCs	4788.03	UANG-S6-MW3	4-Chloroaniline	C
UJ	SVOCs	4788.03	UANG-S6-MW3	3-Nitroanaline	C
UJ	SVOCs	4624.07	UANG-S6-SB1 (2.5-4.5)	4-Nitroaniline	C
UJ	SVOCs	4624.07	UANG-S6-SB1 (2.5-4.5)	Hexachlorobenzene	C
UJ	SVOCs	4624.07	UANG-S6-SB1 (2.5-4.5)	Benzyl Alcohol	C
UJ	SVOCs	4624.07	UANG-S6-SB1 (2.5-4.5)	Hexachlorobutadiene	C
UJ	SVOCs	4624.07	UANG-S6-SB1 (2.5-4.5)	3-Nitroanaline	B,C
J	SVOCs	4624.05	UANG-S6-SB1 (6.5-9)	Diethylphthalate	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4624.05	UANG-S6-SB1 (6.5-9)	Hexachlorobenzene	C
UJ	SVOCs	4624.05	UANG-S6-SB1 (6.5-9)	Pyrene	C
UJ	SVOCs	4624.05	UANG-S6-SB1 (6.5-9)	Di-n-octylphthalate	C
UJ	SVOCs	4624.05	UANG-S6-SB1 (6.5-9)	Benzyl Alcohol	C
UJ	SVOCs	4624.05	UANG-S6-SB1 (6.5-9)	3-Nitroanaline	B
UJ	SVOCs	4627.07	UANG-S6-SB2 (2-4)	Benzyl Alcohol	C
UJ	SVOCs	4627.07	UANG-S6-SB2 (2-4)	3-Nitroanaline	B
UJ	SVOCs	4627.07	UANG-S6-SB2 (2-4)	Hexachlorobenzene	C
UJ	SVOCs	4627.07	UANG-S6-SB2 (2-4)	Di-n-octylphthalate	C
UJ	VOCs	4627.04	UANG-S6-SB2 (6-8.5)	1,2-Dichloroethane	C
UJ	SVOCs	4627.04	UANG-S6-SB2 (6-8.5)	Benzyl Alcohol	C
UJ	SVOCs	4627.04	UANG-S6-SB2 (6-8.5)	3-Nitroanaline	B
UJ	SVOCs	4627.04	UANG-S6-SB2 (6-8.5)	Hexachlorobenzene	C
J	SVOCs	4627.04	UANG-S6-SB2 (6-8.5)	bis(2-ethylhexyl) Phthalate	A
UJ	SVOCs	4627.04	UANG-S6-SB2 (6-8.5)	Di-n-octylphthalate	C
UJ	VOCs	4627.06	UANG-S6-SB3 (0.5-2.5)	1,2-Dichloroethane	C
UJ	SVOCs	4627.06	UANG-S6-SB3 (0.5-2.5)	Benzyl Alcohol	C
UJ	SVOCs	4627.06	UANG-S6-SB3 (0.5-2.5)	3-Nitroanaline	B
UJ	SVOCs	4627.06	UANG-S6-SB3 (0.5-2.5)	Hexachlorobenzene	C
UJ	SVOCs	4627.06	UANG-S6-SB3 (0.5-2.5)	Di-n-octylphthalate	C
UJ	SVOCs	4627.01	UANG-S6-SB3 (6.5-9)	N-Nitroso-Dimethylamine	C
UJ	VOCs	4627.05	UANG-S6-SB4 (0-2)	1,2-Dichloroethane	C
UJ	SVOCs	4627.05	UANG-S6-SB4 (0-2)	Benzyl Alcohol	C
UJ	SVOCs	4627.05	UANG-S6-SB4 (0-2)	3-Nitroanaline	B
UJ	SVOCs	4627.05	UANG-S6-SB4 (0-2)	Hexachlorobenzene	C
UJ	SVOCs	4627.05	UANG-S6-SB4 (0-2)	Di-n-octylphthalate	C
UJ	SVOCs	4627.02	UANG-S6-SB4 (6-8.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4627.03	UANG-S6-SB4 (8.5-11)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4633.14	UANG-S6-SB5 (0-2)	Benzyl Alcohol	B
UJ	SVOCs	4633.04	UANG-S6-SB5 (6-8.5)	Benzyl Alcohol	B
UJ	SVOCs	4633.11	UANG-S6-SB6 (2-4)	Benzyl Alcohol	B
UJ	SVOCs	4633.08	UANG-S6-SB6 (6-8.5)	Benzyl Alcohol	B
J	SVOCs	4633.08	UANG-S6-SB6 (6-8.5)	bis(2-ethylhexyl) Phthalate	A
UJ	SVOCs	4633.07	UANG-S6-SB6 (8.5-11)	Benzyl Alcohol	B
UJ	SVOCs	4633.12	UANG-S6-SB7 (2-4)	Benzyl Alcohol	B
UJ	SVOCs	4633.06	UANG-S6-SB7 (6-8.5)	Benzyl Alcohol	B
UJ	SVOCs	4633.13	UANG-S6-SB8 (2.5-4.5)	Benzyl Alcohol	B
UJ	SVOCs	4633.05	UANG-S6-SB8 (6.5-9)	Benzyl Alcohol	B
J	SVOCs	4642.01	UANG-S6-SB9 (0-2)	Benzyl Alcohol	B
UJ	SVOCs	4642.01	UANG-S6-SB9 (0-2)	3-Nitroanaline	B
UJ	SVOCs	4642.01	UANG-S6-SB9 (0-2)	Pyrene	C
UJ	SVOCs	4642.02	UANG-S6-SB9 (6-8.5)	Benzyl Alcohol	B
UJ	SVOCs	4642.02	UANG-S6-SB9 (6-8.5)	3-Nitroanaline	B,C
UJ	SVOCs	4642.03	UANG-S6-SB10 (0-2)	3-Nitroanaline	B,C
UJ	SVOCs	4642.03	UANG-S6-SB10 (0-2)	2,4-Dinitrophenol	B

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4642.03	UANG-S6-SB10 (0-2)	4-Nitroanaline	B
UJ	SVOCs	4642.04	UANG-S6-SB10 (6-8.5)	3-Nitroanaline	C
J	Metals	4781.01	UANG-S7-MW1	Arsenic	D
UJ	Metals	4781.01	UANG-S7-MW1	Copper	A
UJ	Metals	4781.01	UANG-S7-MW1	Mercury	E
UJ	Metals	4781.01	UANG-S7-MW1	Nickel	E
UJ	Metals	4781.01	UANG-S7-MW1	Selenium	D
UJ	Metals	4781.01	UANG-S7-MW1	Zinc	E,A
J	VOCs	4781.01	UANG-S7-MW1	Ethylbenzene	A
J	VOCs	4781.01	UANG-S7-MW1	Toluene	A
UJ	VOCs	4781.01	UANG-S7-MW1	Chloromethane	C
UJ	VOCs	4781.01	UANG-S7-MW1	Dichlorodifluoromethane	C
UJ	VOCs	4781.01	UANG-S7-MW1	1,2-Dichloropropane	C
J	Metals	4781.06	UANG-S7-MW2	Arsenic	D
UJ	Metals	4781.06	UANG-S7-MW2	Chromium	E,A
UJ	Metals	4781.06	UANG-S7-MW2	Copper	E,A
UJ	Metals	4781.06	UANG-S7-MW2	Mercury	E
UJ	Metals	4781.06	UANG-S7-MW2	Nickel	E
J	Metals	4781.06	UANG-S7-MW2	Selenium	A
UJ	Metals	4781.06	UANG-S7-MW2	Zinc	A
J	VOCs	4781.06	UANG-S7-MW2	Toluene	A
UJ	SVOCs	4781.06	UANG-S7-MW2	4-Nitroaniline	C
UJ	SVOCs	4781.06	UANG-S7-MW2	3,3-Dichlorobenzidine	C
UJ	SVOCs	4781.06	UANG-S7-MW2	4-Chloroaniline	C
UJ	SVOCs	4781.06	UANG-S7-MW2	3-Nitroaniline	C
UJ	VOCs	4781.06	UANG-S7-MW2	Chloromethane	C
UJ	VOCs	4781.06	UANG-S7-MW2	Dichlorodifluoromethane	C
UJ	VOCs	4781.06	UANG-S7-MW2	1,2-Dichloropropane	C
J	Metals	4595.08	UANG-S7-SB1 (2.5-4.5)	Arsenic	F
UJ	Metals	4595.08	UANG-S7-SB1 (2.5-4.5)	Cadmium	D
J	Metals	4595.08	UANG-S7-SB1 (2.5-4.5)	Chromium	G
UJ	Metals	4595.08	UANG-S7-SB1 (2.5-4.5)	Mercury	E
UJ	Metals	4595.08	UANG-S7-SB1 (2.5-4.5)	Selenium	D,H
J	Metals	4595.08	UANG-S7-SB1 (2.5-4.5)	Zinc	G
UJ	VOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	Acetone	B
UJ	VOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	1,1-Dichloroethane	C
UJ	VOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	2-Hexanaone	C
UJ	SVOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	Benzyl Alcohol	C
UJ	SVOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	Benzoic Acid	B,C
UJ	SVOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	3-Nitroaniline	C
UJ	SVOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	4-Nitroaniline	C
UJ	SVOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	3-3'-Dichlorobenzidine	C
UJ	SVOCs	4595.08	UANG-S7-SB1 (2.5-4.5)	bis(2-ethylhexyl) Phthalate	C
J	Metals	4595.09	UANG-S7-SB1 (7-9)	Arsenic	F
J	Metals	4595.09	UANG-S7-SB1 (7-9)	Beryllium	A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Metals	4595.09	UANG-S7-SB1 (7-9)	Cadmium	D
J	Metals	4595.09	UANG-S7-SB1 (7-9)	Chromium	G
UJ	Metals	4595.09	UANG-S7-SB1 (7-9)	Mercury	E
UJ	Metals	4595.09	UANG-S7-SB1 (7-9)	Selenium	D,H
J	Metals	4595.09	UANG-S7-SB1 (7-9)	Zinc	G
UJ	SVOCs	4595.09	UANG-S7-SB1 (7-9)	Benzyl Alcohol	C
UJ	SVOCs	4595.09	UANG-S7-SB1 (7-9)	Benzoic Acid	C
UJ	SVOCs	4595.09	UANG-S7-SB1 (7-9)	3-Nitroaniline	C
UJ	SVOCs	4595.09	UANG-S7-SB1 (7-9)	4-Nitroaniline	C
UJ	SVOCs	4595.09	UANG-S7-SB1 (7-9)	3-3'-Dichlorobenzidine	C
UJ	SVOCs	4595.09	UANG-S7-SB1 (7-9)	bis(2-ethylhexyl) Phthalate	C
J	Metals	4601.03	UANG-S7-SB2 (2.5-4.5)	Arsenic	F
UJ	Metals	4601.03	UANG-S7-SB2 (2.5-4.5)	Cadmium	D
J	Metals	4601.03	UANG-S7-SB2 (2.5-4.5)	Chromium	G
UJ	Metals	4601.03	UANG-S7-SB2 (2.5-4.5)	Mercury	E
UJ	Metals	4601.03	UANG-S7-SB2 (2.5-4.5)	Selenium	D,H
J	Metals	4601.03	UANG-S7-SB2 (2.5-4.5)	Zinc	G
J	VOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Benzene	A
UJ	VOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	2-Chloroethylvinylether	B
J	VOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Toluene	A
J	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Napthalene	A
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Hexachlorocyclopentadiene	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	3-Nitroaniline	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	2,4-Dinitrophenol	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	4-Nitrophenol	C
J	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Fluorene	A
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	4,6-Dinitro-2-Methylphenol	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Pentachlorophenol	C
J	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Phenanthrene	A
J	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Fluoranthene	A
UJ	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	Butylbenzylphthalate	C
J	SVOCs	4601.03	UANG-S7-SB2 (2.5-4.5)	bis(2-ethylhexyl) Phthalate	C
J	Metals	4601.03	UANG-S7-SB2 (6.5-9)	Arsenic	F
UJ	Metals	4601.03	UANG-S7-SB2 (6.5-9)	Cadmium	D
J	Metals	4601.03	UANG-S7-SB2 (6.5-9)	Chromium	G
UJ	Metals	4601.03	UANG-S7-SB2 (6.5-9)	Mercury	E
UJ	Metals	4601.03	UANG-S7-SB2 (6.5-9)	Selenium	D,H
J	Metals	4601.03	UANG-S7-SB2 (6.5-9)	Zinc	G
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	bis (2-chloroisopropyl) Ether	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	bis (2-Chloroethoxy) methane	C
J	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	Napthalene	A
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	2-Nitroaniline	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	3-Nitroaniline	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	4-Nitrophenol	C
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	4-Nitroaniline	C
J	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	Phenanthrene	A
J	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	Fluoranthene	A
J	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	Pyrene	A,C
UJ	SVOCs	4601.03	UANG-S7-SB2 (6.5-9)	3-3'-Dichlorobenzidine	C
UJ	VOCs	4601.03	UANG-S7-SB2 (6.5-9)	Chloromethane	C
J	Metals	4601.05	UANG-S7-SB3 (2.5-4.5)	Arsenic	F
UJ	Metals	4601.05	UANG-S7-SB3 (2.5-4.5)	Cadmium	D
J	Metals	4601.05	UANG-S7-SB3 (2.5-4.5)	Chromium	G
UJ	Metals	4601.05	UANG-S7-SB3 (2.5-4.5)	Mercury	E
UJ	Metals	4601.05	UANG-S7-SB3 (2.5-4.5)	Selenium	D,H
J	Metals	4601.05	UANG-S7-SB3 (2.5-4.5)	Zinc	G
UJ	VOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	2-Chloroethylvinylether	B
J	VOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	Toulene	A
J	VOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	Ethylbenzene	A
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	bis (2-chloroisopropyl) Ether	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	bis (2-Chloroethoxy) methane	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	2-Nitroaniline	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	3-Nitroaniline	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	4-Nitrophenol	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	4-Nitroaniline	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	Pyrene	C
UJ	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	3-3'-Dichlorobenzidine	C
J	SVOCs	4601.05	UANG-S7-SB3 (2.5-4.5)	bis(2-ethylhexyl) Phthalate	A
J	Metals	4601.06	UANG-S7-SB3 (6.5-9)	Arsenic	F
UJ	Metals	4601.06	UANG-S7-SB3 (6.5-9)	Cadmium	D
J	Metals	4601.06	UANG-S7-SB3 (6.5-9)	Chromium	G
UJ	Metals	4601.06	UANG-S7-SB3 (6.5-9)	Mercury	E
UJ	Metals	4601.06	UANG-S7-SB3 (6.5-9)	Selenium	D,H
J	Metals	4601.06	UANG-S7-SB3 (6.5-9)	Zinc	G
UJ	VOCs	4601.06	UANG-S7-SB3 (6.5-9)	Chloromethane	C
J	VOCs	4601.06	UANG-S7-SB3 (6.5-9)	Methylene Chloride	A
J	VOCs	4601.06	UANG-S7-SB3 (6.5-9)	Total Xylenes	A
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	N-Nitroso-Dimethylamine	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	bis (2-chloroisopropyl) Ether	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	N-Nitroso-Di-n-Propylamine	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	bis (2-Chloroethoxy) methane	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	2-Nitroaniline	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	3-Nitroaniline	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	4-Nitrophenol	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	4-Nitroaniline	C
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	Pyrene	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	3-3'-Dichlorobenzidine	C
J	SVOCs	4601.06	UANG-S7-SB3 (6.5-9)	bis(2-ethylhexyl) Phthalate	A
UJ	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Antimony	D
J	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Arsenic	D
J	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Beryllium	A
UJ	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Cadmium	D
UJ	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Mercury	E
UJ	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Selenium	D,H
UJ	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Thallium	D,H
J	Metals	4654.02	UANG-S7-SB4 (4.5-6.5)	Zinc	G
UJ	SVOCs	4654.02	UANG-S7-SB4 (4.5-6.5)	Benzyl Alcohol	B
UJ	SVOCs	4654.02	UANG-S7-SB4 (4.5-6.5)	3-Nitroaniline	B
UJ	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Antimony	D
J	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Arsenic	D,A
J	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Beryllium	A
UJ	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Cadmium	D
J	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Lead	H
UJ	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Mercury	E
UJ	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Selenium	D,H
UJ	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Thallium	D,H
J	Metals	4654.03	UANG-S7-SB5 (4.5-6.5)	Zinc	G
UJ	SVOCs	4654.03	UANG-S7-SB5 (4.5-6.5)	3-Nitroaniline	B,C
UJ	SVOCs	4654.03	UANG-S7-SB5 (4.5-6.5)	2,4-Dinitrophenol	B
UJ	SVOCs	4654.03	UANG-S7-SB5 (4.5-6.5)	4-Nitroaniline	B
UJ	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Antimony	D
J	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Arsenic	D
UJ	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Cadmium	D
UJ	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Mercury	E
UJ	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Selenium	D,H
UJ	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Thallium	D,H
J	Metals	4654.04	UANG-S7-SB5 (6.5-9)	Zinc	G
UJ	SVOCs	4654.04	UANG-S7-SB5 (6.5-9)	Benzyl Alcohol	B
UJ	SVOCs	4654.04	UANG-S7-SB5 (6.5-9)	3-Nitroaniline	B,C
UJ	Metals	4654.05	UANG-S7-SB6 (4-6)	Antimony	D
J	Metals	4654.05	UANG-S7-SB6 (4-6)	Arsenic	D
J	Metals	4654.05	UANG-S7-SB6 (4-6)	Beryllium	A
UJ	Metals	4654.05	UANG-S7-SB6 (4-6)	Cadmium	D
J	Metals	4654.05	UANG-S7-SB6 (4-6)	Mercury	E
UJ	Metals	4654.05	UANG-S7-SB6 (4-6)	Nickel	A
UJ	Metals	4654.05	UANG-S7-SB6 (4-6)	Selenium	D,H
UJ	Metals	4654.05	UANG-S7-SB6 (4-6)	Thallium	D,H
J	Metals	4654.05	UANG-S7-SB6 (4-6)	Zinc	G
UJ	SVOCs	4654.05	UANG-S7-SB6 (4-6)	Benzyl Alcohol	B
UJ	SVOCs	4654.05	UANG-S7-SB6 (4-6)	3-Nitroaniline	B,C
UJ	SVOCs	4683.14	UANG-S7-SB7 (1-3)	Pentachlorophenol	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Metals	4683.14	UANG-S7-SB7 (1-3)	Antimony	D
UJ	Metals	4683.14	UANG-S7-SB7 (1-3)	Cadmium	E,A
J	Metals	4683.14	UANG-S7-SB7 (1-3)	Chromium	G
J	Metals	4683.14	UANG-S7-SB7 (1-3)	Lead	F
UJ	Metals	4683.14	UANG-S7-SB7 (1-3)	Mercury	E
UJ	Metals	4683.14	UANG-S7-SB7 (1-3)	Selenium	D,H
UJ	Metals	4683.14	UANG-S7-SB7 (1-3)	Thallium	D,H
J	Metals	4683.14	UANG-S7-SB7 (1-3)	Zinc	G
UJ	SVOCs	4797.04	UANG-S7-SB7 (5-7)	3-Nitroaniline	B,C
UJ	SVOCs	4797.04	UANG-S7-SB7 (5-7)	4-Nitroaniline	C
UJ	Metals	4797.04	UANG-S7-SB7 (5-7)	Antimony	D
J	Metals	4797.04	UANG-S7-SB7 (5-7)	Arsenic	A
UJ	Metals	4797.04	UANG-S7-SB7 (5-7)	Cadmium	E,A
J	Metals	4797.04	UANG-S7-SB7 (5-7)	Chromium	G
J	Metals	4797.04	UANG-S7-SB7 (5-7)	Lead	F
UJ	Metals	4797.04	UANG-S7-SB7 (5-7)	Mercury	E
UJ	Metals	4797.04	UANG-S7-SB7 (5-7)	Selenium	D,H
UJ	Metals	4797.04	UANG-S7-SB7 (5-7)	Thallium	D,H
J	Metals	4797.04	UANG-S7-SB7 (5-7)	Zinc	G
J	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Antimony	D,A
J	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Arsenic	D,A
J	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Beryllium	A
UJ	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Cadmium	D
UJ	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Mercury	E
UJ	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Selenium	D,H
UJ	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Thallium	D,H
J	Metals	4683.04	UANG-S7-SB8 (4.5-6.5)	Zinc	G
UJ	SVOCs	4683.04	UANG-S7-SB8 (4.5-6.5)	3-Nitroaniline	B
UJ	SVOCs	4683.04	UANG-S7-SB8 (4.5-6.5)	2,4-Dinitrophenol	B
UJ	SVOCs	4683.04	UANG-S7-SB8 (4.5-6.5)	4-Nitroaniline	B
UJ	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Antimony	E,D,A
J	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Arsenic	D
J	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Beryllium	A
J	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Cadmium	A
J	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Chromium	G
J	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Lead	D,H
UJ	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Mercury	E
UJ	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Thallium	D,H
J	Metals	4705.05	UANG-S7-SB9 (2.5-4.5)	Zinc	G
UJ	SVOCs	4705.05	UANG-S7-SB9 (2.5-4.5)	Phenol	C
UJ	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Antimony	E,D,A
J	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Arsenic	D
J	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Beryllium	A
J	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Cadmium	A
J	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Chromium	G

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Lead	D,H
UJ	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Mercury	E
UJ	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Thallium	D,H
J	Metals	4705.07	UANG-S7-SB9 (4.5-6.5)	Zinc	G
UJ	SVOCs	4705.07	UANG-S7-SB9 (4.5-6.5)	Phenol	C
UJ	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Antimony	E,D,A
J	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Arsenic	D
J	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Beryllium	A
J	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Cadmium	A
J	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Chromium	G
J	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Lead	D,H
UJ	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Mercury	E
UJ	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Thallium	D,H
J	Metals	4705.06	UANG-S7-SB9 (8.5-9.5)	Zinc	G
UJ	SVOCs	4705.06	UANG-S7-SB9 (8.5-9.5)	Phenol	C
UJ	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Antimony	E,D,A
J	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Arsenic	D
J	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Beryllium	A
J	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Cadmium	A
J	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Chromium	G
J	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Lead	D,H
UJ	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Mercury	E
UJ	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Thallium	D,H
J	Metals	4705.08	ANG-S7-SB10 (4.5-6.5	Zinc	G
UJ	SVOCs	4705.08	ANG-S7-SB10 (4.5-6.5	Phenol	C
UJ	VOCs	EN 1324	UANG-S10-SB1 (2-4)	Chloromethane	C
UJ	VOCs	EN 1324	UANG-S10-SB1 (2-4)	Bromoform	C
UJ	VOCs	EN 1324	UANG-S10-SB1 (2-4)	1,1,2,2-Tetrachloroethane	C
UJ	VOCs	EN 1324	UANG-S10-SB1 (2-4)	1,1,1-Trichloroethane	C
J	VOCs	EN 1324	UANG-S10-SB1 (2-4)	Xylene	C
UJ	VOCs	EN 1325	UANG-S10-SB1 (6-8)	Chloromethane	C
UJ	VOCs	EN 1325	UANG-S10-SB1 (6-8)	Bromoform	C
UJ	VOCs	EN 1325	UANG-S10-SB1 (6-8)	1,1,2,2-Tetrachloroethane	C
UJ	VOCs	EN 1325	UANG-S10-SB1 (6-8)	1,1,1-Trichloroethane	C
J	VOCs	EN 1325	UANG-S10-SB1 (6-8)	Xylene	C
J	TPH	EN 1325	UANG-S10-SB1 (6-8)	Gasoline	J
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	Acetone	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	Acrylonitrile	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	2-Butanone	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	Vinylacetate	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	2-Chloroethylvinylether	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	4-Methyl-2-pentanone	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	1,2,3-Trichloropropane	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	2-Hexanone	C
UJ	VOCs	EN1311	UANG-S10-SB1 (8-10)	Ethyl Methacrylate	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
J	VOCs	EN1311	UANG-S10-SB1 (8-10)	Benzene	C
UJ	VOCs	EN1318	UANG-S10-SB2 (2-4)	Chloromethane	C
UJ	VOCs	EN1319	UANG-S10-SB2 (4-6)	Chloromethane	C
J	VOCs	EN1319	UANG-S10-SB2 (4-6)	Xylenes	C
UJ	VOCs	EN1320	UANG-S10-SB3 (1-3)	Chloromethane	C
UJ	VOCs	EN1321	UANG-S10-SB3 (3-5)	Chloromethane	C
UJ	VOCs	EN1322	UANG-S10-SB4 (2-4)	Chloromethane	C
UJ	VOCs	EN1323	UANG-S10-SB4 (4-6)	Chloromethane	C
UJ	VOCs	4737.03	UANG-TB2	Chloroform	C
UJ	VOCs	4737.03	UANG-TB2	Dibromomethane	B,C
UJ	VOCs	4737.03	UANG-TB2	Trichlorofluoromethane	C
UJ	VOCs	4595-10	UANG-TB2	Chloromethane	C
UJ	VOCs	4595-10	UANG-TB2	Acetone	B
UJ	VOCs	4595-10	UANG-TB2	1,1-Dichloroethane	C
UJ	VOCs	4601.02	UANG-TB3	Acetone	B,C
UJ	VOCs	4601.02	UANG-TB3	1,1-Dichloroethane	C
UJ	VOCs	4601.02	UANG-TB3	2-Hexanone	C
UJ	VOCs	4608.02	UANG-TB4	Chloroethene	C
UJ	VOCs	4608.02	UANG-TB4	Acetone	B
UJ	VOCs	4608.02	UANG-TB4	1,1-Dichloroethane	C
UJ	VOCs	4608.02	UANG-TB4	2-Hexanone	C
UJ	VOCs	4624.11	UANG-TB5	Chloroethane	B
UJ	VOCs	4624.11	UANG-TB5	Acetone	B
UJ	VOCs	4627.09	UANG-TB6	Chloroethane	B
UJ	VOCs	4627.09	UANG-TB6	Acetone	B
UJ	VOCs	4627.09	UANG-TB6	1,2-Dichloroethene (Total)	C
UJ	VOCs	4779.12	UANG-TB17	Dichlorodifluoromethane	C
UJ	VOCs	4718.07	UANG-TB18	Chloromethane	C
UJ	VOCs	4718.07	UANG-TB18	Dichlorodifluoromethane	C
UJ	VOCs	4718.07	UANG-TB18	1,2-Dichloroproane	C
UJ	VOCs	4788.07	UANG-TB-19	Bromoform	B
UJ	VOCs	4801.02	UANG-TB21	Benzyl Chloride	C
UJ	VOCs	4801.02	UANG-TB21	Bromoform	B,C
UJ	VOCs	4801.02	UANG-TB21	Dibromochloromethane	C
UJ	VOCs	4801.02	UANG-TB21	Dichlorodifluoromethane	C
UJ	VOCs	4801.02	UANG-TB21	1,2-Dichloropropene	C
UJ	VOCs	4804.09	UANG-TB22	Benzyl Chloride	C
UJ	VOCs	4804.09	UANG-TB22	Bromoform	B,C
UJ	VOCs	4804.09	UANG-TB22	Dibromochloromethane	C
UJ	VOCs	4804.09	UANG-TB22	Dichlorodifluoromethane	C
UJ	VOCs	4804.09	UANG-TB22	1,2-Dichloropropene	C
UJ	VOCs	4601.01	UANG-RB1	Hexachlorocyclopentadiene	C
UJ	VOCs	4601.01	UANG-RB1	2,4-Dinitrophenol	C
UJ	VOCs	4601.01	UANG-RB1	Acetone	B,C
UJ	VOCs	4601.01	UANG-RB1	1,1-Dichloroethane	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	VOCs	4601.01	UANG-RB1	2-Hexanone	C
UJ	Metals	4601.01	UANG-RB1	Lead	E,K,A
UJ	Metals	4601.01	UANG-RB1	Mercury	E
J	Metals	4601.01	UANG-RB1	Zinc	A
UJ	VOCs	4608.01	UANG-RB2	Chloroethane	B
UJ	VOCs	4608.01	UANG-RB2	Acetone	B
UJ	SVOCs	4608.01	UANG-RB2	Benzoic Acid	B
UJ	SVOCs	4608.01	UANG-RB2	Hexachlorocyclopentadiene	C
UJ	SVOCs	4608.01	UANG-RB2	2,4-Dinitrophenol	C
UJ	Metals	4608.01	UANG-RB2	Cadmium	E,A
UJ	Metals	4608.01	UANG-RB2	Lead	E,A
UJ	Metals	4608.01	UANG-RB2	Mercury	A
UJ	VOCs	4624.10	UANG-RB3	Chloroethane	B
UJ	VOCs	4624.10	UANG-RB3	Acetone	B
UJ	SVOCs	4624.10	UANG-RB3	Benzoic Acid	B
UJ	SVOCs	4624.10	UANG-RB3	Hexachlorocyclopentadiene	C
UJ	SVOCs	4624.10	UANG-RB3	2,4-Dinitrophenol	C
UJ	SVOCs	4627.08	UANG-S6-ERB4	Benzoic Acid	B
UJ	SVOCs	4627.08	UANG-S6-ERB4	Hexachlorocyclopentadiene	C
UJ	SVOCs	4627.08	UANG-S6-ERB4	2,4-Dinitrophenol	C
UJ	VOCs	4627.08	UANG-S6-ERB4	Chlorethane	B,C
UJ	VOCs	4627.08	UANG-S6-ERB4	Acetone	B,C
UJ	VOCs	4627.08	UANG-S6-ERB4	1,2-Dichloroethene (Total)	C
UJ	SVOCs	4633.01	UANG-S6-RB5	Benzoic Acid	B
J	VOCs	4779.07	UANG-S3-RB6	Toluene	A
UJ	VOCs	4779.07	UANG-S3-RB6	Dichlorodifluoromethane	C
UJ	SVOCs	4683.01	UANG-S3-RB9	Benzoic Acid	B
UJ	SVOCs	4683.01	UANG-S3-RB9	3,3'-Dichlorobenzidine	C
UJ	Metals	4781.02	UANG-S7-ER13	Arsenic	E,D
UJ	Metals	4781.02	UANG-S7-ER13	Chromium	E,A
UJ	Metals	4781.02	UANG-S7-ER13	Copper	E,A
UJ	Metals	4781.02	UANG-S7-ER13	Mercury	E
UJ	Metals	4781.02	UANG-S7-ER13	Nickel	E
UJ	Metals	4781.02	UANG-S7-ER13	Selenium	D,H
UJ	Metals	4781.02	UANG-S7-ER13	Zinc	E,A
J	VOCs	4781.05	UANG-S7-ER14	Toluene	A
UJ	Metals	4781.05	UANG-S7-ER14	Arsenic	E,D
UJ	Metals	4781.05	UANG-S7-ER14	Chromium	E,A
UJ	Metals	4781.05	UANG-S7-ER14	Copper	E,A
UJ	Metals	4781.05	UANG-S7-ER14	Mercury	E
UJ	Metals	4781.05	UANG-S7-ER14	Nickel	E
UJ	Metals	4781.05	UANG-S7-ER14	Selenium	D
UJ	Metals	4781.05	UANG-S7-ER14	Zinc	E,A
J	VOCs	4781.05	UANG-S7-ER14	Carbon Tetrachloride	C
UJ	VOCs	4781.05	UANG-S7-ER14	Chloromethane	C

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	VOCs	4781.05	UANG-S7-ER14	Dichlorodifluoromethane	C
UJ	VOCs	4781.05	UANG-S7-ER14	1,2-Dichloropropane	C
UJ	SVOCs	4788.02	UANG-S6-ER20	4-Chloroaniline	C
UJ	SVOCs	4788.02	UANG-S6-ER20	3-Nitroaniline	C
J	SVOCs	4788.02	UANG-S6-ER20	Diethyphthalate	A
UJ	SVOCs	4788.02	UANG-S6-ER20	4-Nitroaniline	C
UJ	SVOCs	4788.02	UANG-S6-ER20	3,3'-Dichlorobenzidine	C
UJ	VOCs	4779.06	UANG-FB5-8	Dichlorodifluoromethane	C
UJ	VOCs	4779.07	UANG-S3-RB6	Dichlorodifluoromethane	C
UJ	SVOCs	4654.01	UANG-S7-RB8	Benzoic Acid	C
UJ	SVOCs	4654.01	UANG-S7-RB8	3-Nitroaniline	C
UJ	SVOCs	4654.01	UANG-S7-RB8	2,4-Dinitrophenol	C
UJ	SVOCs	4654.01	UANG-S7-RB8	4-Nitrophenol	C
UJ	SVOCs	4654.01	UANG-S7-RB8	4-Nitroaniline	C
UJ	SVOCs	4654.01	UANG-S7-RB8	4,6-Dinitro-2-Methylphenol	C
UJ	SVOCs	4654.01	UANG-S7-RB8	Pyrene	C
UJ	SVOCs	4654.01	UANG-S7-RB8	Butylbenzylphthalate	C
UJ	SVOCs	4654.01	UANG-S7-RB8	bis (2-Ethylhexyl) Phthalate	C
UJ	Metals	4654.01	UANG-S7-RB8	Cadmium	E,A
J	Metals	4654.01	UANG-S7-RB8	Chromium	A
UJ	Metals	4654.01	UANG-S7-RB8	Mercury	E
J	Metals	4642.17	UANG-FB1	Copper	A
UJ	Metals	4642.17	UANG-FB1	Lead	E,K,H
UJ	Metals	4642.17	UANG-FB1	Mercury	E
UJ	Metals	4642.17	UANG-FB1	Thallium	H
J	Metals	4642.17	UANG-FB1	Zinc	A
UJ	SVOCs	4779.01	UANG-FB4	3-Nitroaniline	B,C
J	VOCs	4779.06	UANG-FB5-8	Ethylbenzene	A
J	VOCs	4779.06	UANG-FB5-8	Chlorobenzene	A
	VOCs	4779.06	UANG-FB5-8	Dichlorodifluoromethane	C
UJ	Metals	4779.06	UANG-FB5-8	Arsenic	E,D
UJ	Metals	4779.06	UANG-FB5-8	Chromium	E,A
UJ	Metals	4779.06	UANG-FB5-8	Copper	E,A
UJ	Metals	4779.06	UANG-FB5-8	Mercury	E
UJ	Metals	4779.06	UANG-FB5-8	Nickel	E
UJ	Metals	4779.06	UANG-FB5-8	Selenium	D,H
UJ	Metals	4779.06	UANG-FB5-8	Zinc	E,A
UJ	VOCs	4781.04	UANG-FB6-15	Chloromethane	C
UJ	VOCs	4781.04	UANG-FB6-15	Dichlorodifluoromethane	C
UJ	VOCs	4781.04	UANG-FB6-15	1,2-Dichloropropane	C
UJ	Metals	4781.04	UANG-FB6-15	Arsenic	E,D,H
UJ	Metals	4781.04	UANG-FB6-15	Chromium	E,A
UJ	Metals	4781.04	UANG-FB6-15	Lead	H
UJ	Metals	4781.04	UANG-FB6-15	Mercury	E
UJ	Metals	4781.04	UANG-FB6-15	Nickel	E

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	Metals	4781.04	UANG-FB6-15	Selenium	D
J	Metals	4781.04	UANG-FB6-15	Zinc	A
UJ	VOCs	4788.01	UANG-FB7-19	Bromoform	B
UJ	SVOCs	4788.01	UANG-FB7-19	4-Chloroaniline	C
UJ	SVOCs	4788.01	UANG-FB7-19	3-Nitroaniline	C
UJ	SVOCs	4788.01	UANG-FB7-19	4-Nitroaniline	C
UJ	SVOCs	4788.01	UANG-FB7-19	3,3'-Dichlorobenzidine	C
UJ	Metals	4788.01	UANG-FB7-19	Arsenic	E,D
UJ	Metals	4788.01	UANG-FB7-19	Cadmium	E,A
UJ	Metals	4788.01	UANG-FB7-19	Chromium	E,A
UJ	Metals	4788.01	UANG-FB7-19	Copper	E,A
UJ	Metals	4788.01	UANG-FB7-19	Mercury	E
UJ	Metals	4788.01	UANG-FB7-19	Nickel	E
UJ	Metals	4788.01	UANG-FB7-19	Selenium	D
UJ	Metals	4788.01	UANG-FB7-19	Zinc	E,A
UJ	VOCs	4804.08	UANG-FB8	Benzyl Chloride	C
UJ	VOCs	4804.08	UANG-FB8	Bromoform	B,C
UJ	VOCs	4804.08	UANG-FB8	Dibromochloromethane	C
UJ	VOCs	4804.08	UANG-FB8	Dichlorodifluoromethane	C
UJ	VOCs	4804.08	UANG-FB8	1,2-Dichloropropane	C
J	SVOCs	4804.08	UANG-FB8	1,3-Dichlorobenzene	A
UJ	SVOCs	4804.08	UANG-FB8	Hexachlorocyclopentadiene	C
UJ	SVOCs	4804.08	UANG-FB8	Hexachlorobenzene	C
UJ	SVOCs	4804.08	UANG-FB8	3,3'-Dichlorobenzidine	C
UJ	Pesticides	4804.08	UANG-FB8	Heptachlor Epoxide	B
UJ	Metals	4804.08	UANG-FB8	Antimony	E
UJ	Metals	4804.08	UANG-FB8	Arsenic	D,F
UJ	Metals	4804.08	UANG-FB8	Copper	E,A
UJ	Metals	4804.08	UANG-FB8	Lead	D,H
UJ	Metals	4804.08	UANG-FB8	Mercury	E
UJ	Metals	4804.08	UANG-FB8	Nickel	E
UJ	Metals	4804.08	UANG-FB8	Selenium	D
UJ	Metals	4804.08	UANG-FB8	Thallium	D
UJ	Metals	4804.08	UANG-FB8	Zinc	E,A
UJ	Pesticides	4806.08	UANG-FB9	Heptachlor Epoxide	B
UJ	Metals	4806.08	UANG-FB9	Antimony	E
UJ	Metals	4806.08	UANG-FB9	Arsenic	,D,F,A
UJ	Metals	4806.08	UANG-FB9	Chromium	E,A
UJ	Metals	4806.08	UANG-FB9	Copper	E,A
UJ	Metals	4806.08	UANG-FB9	Lead	E,D,A
UJ	Metals	4806.08	UANG-FB9	Mercury	E
UJ	Metals	4806.08	UANG-FB9	Nickel	E
UJ	Metals	4806.08	UANG-FB9	Selenium	D
UJ	Metals	4806.08	UANG-FB9	Thallium	D,H
UJ	Metals	4806.08	UANG-FB9	Zinc	E,A

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
UJ	SVOCs	4806.10	UANG-CS-FB10	3-Nitroaniline	C
UJ	SVOCs	4806.09	UANG-CS-EQR	3-Nitroaniline	C
UJ	VOCs	4788.02	UANG-S6-ER20	Bromoform	B
J	VOCs	4781.05	UANG-S7-ER14	Carbon Tetrachloride	A
UJ	VOCs	4781.05	UANG-S7-ER14	Chloromethane	C
UJ	VOCs	4781.05	UANG-S7-ER14	Dichlorodifluoromethane	C
UJ	VOCs	4781.05	UANG-S7-ER14	1,2-Dichloropropane	C
J	VOCs	4781.02	UANG-S7-ER13	Carbon Tetrachloride	A
UJ	VOCs	4781.02	UANG-S7-ER13	Chloromethane	C
UJ	VOCs	4781.02	UANG-S7-ER13	Dichlorodifluoromethane	C
UJ	VOCs	4781.02	UANG-S7-ER13	1,2-Dichloropropane	C
			METHOD BLANK QUALIFICATIONS		
U	Metals	4781.02	UANG-S7-EQR13	Lead	E
U	Metals	4788.01	UANG-FB7-19	Lead	E
5U	VOCs	EN1311	UANG-S10-SB1 (8-10)	Dichloromethane	E
40U	VOCs	4595.04	UANG-S2-SB2	Acetone	E
20U	VOCs	4595.05	UANG-S2-SB2	Acetone	E
40U	VOCs	4595.02	UANG-S2-SB3	Acetone	E
40U	VOCs	4595.03	UANG-S2-SB3	Acetone	E
20U	VOCs	4595.06	UANG-S2-SB1	Acetone	E
10U	VOCs	4601.09	UANG-S4-SB1	Acetone	E
16U	VOCs	4608.03	UANG-S4-SB2	Acetone	E
13U	VOCs	4608.04	UANG-S4-SB2	Acetone	E
12U	VOCs	4608.05	UANG-S4-SB3	Acetone	E
13U	VOCs	4608.06	UANG-S4-SB3	Acetone	E
19U	VOCs	4608.07	UANG-S4-SB4	Acetone	E
12U	VOCs	4608.08	UANG-S4-SB4	Acetone	E
15U	VOCs	4608.09	UANG-S4-SB4	Acetone	E
11U	VOCs	4608.10	UANG-S5-SB1	Acetone	E
13U	VOCs	4608.11	UANG-S5-SB1	Acetone	E
12U	VOCs	4627.04	UANG-S6-SB2	Acetone	E
13U	VOCs	4627.01	UANG-S6-SB3	Acetone	E
12U	VOCs	4627.06	UANG-S6-SB3	Acetone	E
14U	VOCs	4627.02	UANG-S6-SB4	Acetone	E
14U	VOCs	4627.03	UANG-S6-SB4	Acetone	E
12U	VOCs	4627.05	UANG-S6-SB4	Acetone	E
500U	VOCs	4595.09	UANG-S7-SB1	Acetone	E
50U	VOCs	4601.04	UANG-S7-SB2	Acetone	E
410U	SVOCs	4601.04	UANG-S7-SB2	Di-n-butylphthalate	E
30U	VOCs	4601.06	UANG-S7-SB3	Acetone	E
100U	VOCs	4601.05	UANG-S7-SB3	Acetone	E
10U	SVOCs	4781.02	UANG-S7-EQR13	bis (2-Ethylhexyl) Phthalate	E
10U	SVOCs	4806.09	UANG-CS-EQR	bis (2-Ethylhexyl) Phthalate	E

TABLE E. 1 Continued

Qualifier	Fraction	Lab I.D.	Field ID	Analyte	Cause
10U	SVOCs	4804.01	UANG-CW1	bis (2-Ethylhexyl) Phthalate	E
10U	SVOCs	4804.03	UANG-CW3	bis (2-Ethylhexyl) Phthalate	E

Qualifiers (Cause Codes)

A- Reported value is between the CRQL and the MDL or the CRDL and the IDL.
B-Initial calibration is out of control.
C-Continuing calibration is out of control.
D-Matrix spike recovery is outside of QC limit.
E-The sample concentration was estimated due to contribution by the laboratory blank .
F-Laboratory duplicate was out of control.
G-Serial dilution %D was out of control.
H-Post spike recovery was outside of the QC limit.
I-Sample preservation method unclear.
J-Surrogate recovery is outside of QC limits.
K-Laboratory Control Sample was out of control.

TABLE E.2
TABLE OF UNUSABLE DATA
ANALYTICAL DATA SUMMARY
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Fraction	Field ID	Lab ID	Analyte	Cause
Metals	UANG-S2-SB1 (0.5-2.5)	4595-07	Antimony	MS %R
Metals	UANG-S2-SB1 (5-7.5)	4595-06	Antimony	MS %R
Metals	UANG-S2-SB2 (2.5-4.5)	4595-04	Antimony	MS %R
Metals	UANG-S2-SB2 (4.5-6.5)	4595-05	Antimony	MS %R
Metals	UANG-S2-SB3 (2.5-4.5)	4595-01	Antimony	MS %R
Metals	UANG-S2-SB3 (4.5-6.5)	4595-02	Antimony	MS %R
Metals	UANG-S2-SB3 (6.5-8.5)	4595-03	Antimony	MS %R
Metals	UANG-S7-SB1 (2.5-4.5)	4595-08	Antimony	MS %R
Metals	UANG-S7-SB1 (7-9)	4595-09	Antimony	MS %R
Metals	UANG-S7-SB2 (2.5-4.5)	4601-03	Antimony	MS %R
Metals	UANG-S7-SB2 (6.5-9)	4601-04	Antimony	MS %R
Metals	UANG-S7-SB3 (2.5-4.5)	4601-05	Antimony	MS %R
Metals	UANG-S7-SB3 (6.5-9)	4601-06	Antimony	MS %R
Metals	UANG-S4-SB1 (6.5-9)	4601-09	Antimony	MS %R
Metals	UANG-S4-SB1 (2.5-4.5)	4601-08	Antimony	MS %R
Metals	UANG-S4-SB8 (0.5-2.5)	4705-01	Selenium	MS %R
Metals	UANG-S4-SB8 (4.5-6.5)	4705-02	Selenium	MS %R
Metals	UANG-S4-SB9 (2.5-4.5)	4705-03	Selenium	MS %R
Metals	UANG-S4-SB9 (4.5-6.5)	4705-04	Selenium	MS %R
Metals	UANG-S7-SB9 (2.5-4.5)	4705-05	Selenium	MS %R
Metals	UANG-S7-SB9 (8.5-9.5)	4705-06	Selenium	MS %R
Metals	UANG-S7-SB9 (4.5-6.5)	4705-07	Selenium	MS %R
Metals	UANG-S7-SB10 (4.5-6.5)	4705-08	Selenium	MS %R
Metals	UANG-S2-SB5 (6.5-8.5)	4705-09	Selenium	MS %R
Metals	UANG-S2-SB6 (6.5-8.5)	4705-10	Selenium	MS %R
Metals	UANG-S3-SB5 (2.5-4.5)	4705.11	Selenium	MS %R
Metals	UANG-BG-MW1 (0-2)	4737-01	Selenium	MS %R
Metals	UANG-BG-MW1 (4-6)	4737-02	Selenium	MS %R
Metals	UANG-PI5 (0-2)	4483-01	Thallium	MS %R
Metals	UANG-PI5 (6-8)	4483-02	Thallium	MS %R
Metals	UANG-BG-MW1 (4-6)	4737-02	Thallium	MS %R
Metals	UANG-FB5-8	4779-06	Thallium	MS %R
Metals	UANG-S7-MW1-11	4781-01	Thallium	MS %R
Metals	UANG-S7-EQR-13	4781-02	Thallium	MS %R
Metals	UANG-S4-MW1-9	4781-03	Thallium	MS %R
Metals	UANG-FB6-15	4781-04	Thallium	MS %R
Metals	UANG-S7-MW2-EQR-14	4781-05	Thallium	MS %R
Metals	UANG-S7-MW2-12	4781-06	Thallium	MS %R
Metals	UANG-S7-SB2 (2.5-4.5)	4601-03	Thallium	MS %R
Metals	UANG-S7-SB2 (6.5-9)	4601-04	Thallium	MS %R

TABLE E.2 Continued

Fraction	Field ID	Lab ID	Analyte	Cause
Metals	UANG-S7-SB3 (2.5-4.5)	4601-05	Thallium	MS %R
Metals	UANG-S7-SB3 (6.5-9)	4601-06	Thallium	MS %R
Metals	UANG-S4-SB1 (6.5-9)	4601-09	Thallium	MS %R
Metals	UANG-S4-SB1 (2.5-4.5)	4601-08	Thallium	MS %R
Metals	UANG-S2-SB1 (0.5-2.5)	4595-07	Thallium	MS %R
Metals	UANG-S2-SB3 (2.5-4.5)	4595-01	Thallium	MS %R
Metals	UANG-S2-SB3 (6.5-8.5)	4595-03	Thallium	MS %R
Metals	UANG-S6-FB7-19	4788-01	Thallium	MS %R
Metals	UANG-S2-MW1	4801-01	Thallium	MS %R
SVOCs	UANG-BG-MW1 (0-2)	4737-01	3-Nitroaniline	CCAL
SVOCs	UANG-FB5-8	4779-06	3-Nitroaniline	CCAL
SVOCs	UANG-S3-RB6	4779-07	3-Nitroaniline	CCAL
SVOCs	UANG-S2-MW1-4	4779-08	3-Nitroaniline	CCAL
SVOCs	UANG-S3-MW3-5	4779-09	3-Nitroaniline	CCAL
SVOCs	UANG-S3-MW1-6	4779-10	3-Nitroaniline	CCAL
SVOCs	UANG-S3-MW2-7	4779-11	3-Nitroaniline	CCAL
SVOCs	UANG-S7-SB7 (2.5-4.5)	4797.03	3-Nitroanaline	CCAL (%D & RRF)
SVOCs	UANG-FB6-15	4781-04	2-Chlorophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2-Methylphenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2-Nitrophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2,4-Dichlorophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2,4-Dimethylphenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2,4-Dinitrophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2,4,5-Trichlorophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2,4,6-Trichlorophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	2-Chlorophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	4-Chloro-3-methylphenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	4-Nitrophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	4,6-Dinitro-2-methylphenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	Pentachlorophenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	Phenol	Surrogate
SVOCs	UANG-FB6-15	4781-04	4-Methylphenol	Surrogate
SVOCs	UANG-S5-SB6 (1-3)	4797-01	3-Nitroaniline	CCAL
SVOCs	UANG-S5-SB6 (5-7)	4797-02	3-Nitroaniline	CCAL
SVOCs	UANG-S5-SB7 (1-3)	4797-05	3-Nitroaniline	CCAL
SVOCs	UANG-S5-SB5 (1-3)	4797-07	3-Nitroaniline	CCAL
SVOCs	UANG-CS5	4806-05	3-Nitroaniline	CCAL
SVOCs	UANG-CS6	4806-06	3-Nitroaniline	CCAL
SVOCs	UANG-FB9	4806-08	2-Chlorophenol	Surrogate
SVOCs	UANG-FB9	4806-08	2-Methylphenol	Surrogate
SVOCs	UANG-FB9	4806-08	2-Nitrophenol	Surrogate
SVOCs	UANG-FB9	4806-08	2,4-Dichlorophenol	Surrogate
SVOCs	UANG-FB9	4806-08	2,4-Dimethylphenol	Surrogate
SVOCs	UANG-FB9	4806-08	2,4-Dinitrophenol	Surrogate
SVOCs	UANG-FB9	4806-08	2,4,5-Trichlorophenol	Surrogate
SVOCs	UANG-FB9	4806-08	2,4,6-Trichlorophenol	Surrogate
SVOCs	UANG-FB9	4806-08	2-Chlorophenol	Surrogate

TABLE E.2 Continued

Fraction	Field ID	Lab ID	Analyte	Cause
SVOCs	UANG-FB9	4806-08	3-Nitroaniline	CCAL
SVOCs	UANG-FB9	4806-08	4-Chloro-3-methylphenol	Surrogate
SVOCs	UANG-FB9	4806-08	4-Nitrophenol	Surrogate
SVOCs	UANG-FB9	4806-08	4-Methylphenol	Surrogate
SVOCs	UANG-FB9	4806-08	4,6-Dinitro-2-methylphenol	Surrogate
SVOCs	UANG-FB9	4806-08	Pentachlorophenol	Surrogate
SVOCs	UANG-FB9	4806-08	Phenol	Surrogate
TRPH	UANG-CS5	4806-05	TRPH	MS/MSD
VOCs	UANG-S7-SB1 (2.5-4.5)	4595-08	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-S7-SB1 (2.5-4.5)	4595-08	2-Butanone	CCAL (%D & RRF)
VOCs	UANG-S7-SB1 (2.5-4.5)	4595-08	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-S7-SB1 (7-9)	4595-09	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S7-SB2 (6.5-9)	4601-04	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S7-SB3 (6.5-9)	4601-06	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S6-SB1 (2.5-4.5)	4624-07	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S6-SB1 (6.5-9)	4624-05	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S6-SB2 (2.5-4.5)	4627-07	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S6-SB2 (6.5-9)	4627-04	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S6-SB3 (2.5-4.5)	4627-06	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S6-SB3 (6.5-9)	4627-01	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S6-SB4 (2.5-4.5)	4627-05	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S6-SB4 (8.5-11)	4627-03	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S6-SB4 (6.5-8.5)	4627-02	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S5-SB1-(6-8.5)	4608-11	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-S5-SB1 (0-2)	4608-10	2-Chloroethylvinylether	CCAL (%D & RRF)
VOCs	UANG-S5-SB2 (6-8.5)	4624-01	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S5-SB2 (2-4)	4624-09	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S5-SB3 (6-8.5)	4624-02	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S5-SB3 (8.5-11)	4624-03	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S5-SB3 (2-4)	4624-08	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S5-SB4 (6-8.5)	4624-04	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S5-SB4 (2-4)	4624-06	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB1 (2.5-4.5)	4601-08	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB2 (2.5-4.5)	4608-03	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB2 (6.5-9)	4608-04	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB1 (6.5-9)	4601-09	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB3 (2.5-4.5)	4608-05	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB3 (6.5-9)	4608-06	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB4 (2.5-4.5)	4608-07	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-S4-SB4 (6.5-9)	4608-08	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S4-SB4 (9-11)	4608-09	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S2-SB1 (0.5-2.5)	4595-07	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S2-SB1 (.5-7.5)	4595-06	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S2-SB2 (4.5-6.5)	4595-05	2-Chloroethylvinylether	ICAL (RSD&RRF)
VOCs	UANG-S2-SB2 (2.5-4.5)	4595-04	2-Chloroethylvinylether	ICAL (none rptd.)
VOCs	UANG-S2-SB3 (6.5-8.5)	4595-03	2-Chloroethylvinylether	ICAL (none rptd.)
VOCs	UANG-S2-SB3 (4.5-6.5)	4595-02	2-Chloroethylvinylether	ICAL (none rptd.)

TABLE E.2 Continued

Fraction	Field ID	Lab ID	Analyte	Cause
VOCs	UANG-S2-SB3 (2.5-4.5)	4595-01	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-S2-SB3 (2.5-4.5)	4595-01	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-EQR-456	4627-08	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-EQR-456	4627-08	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-TB6	4627-09	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-TB6	4627-09	Trichlorofluoromethane	CCAL (RRF)
VOCs	UANG-TB2	4595-10	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-TB2	4595-10	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-RB1	4601-01	2-Chloroethylvinylether	CCAL (RRF)
VOCs	UANG-RB1	4601-01	2-Butanone	CCAL (RSD & RRF)
VOCs	UANG-RB1	4601-01	Trichlorofluoromethane	CCAL (%D & RRF)
VOCs	UANG-TB3	4601-02	Trichlorofluoromethane	CCAL (%D)
VOCs	UANG-TB3	4601-02	2-Butanone	CCAL (RSD & RRF)
VOCs	UANG-TB3	4601-02	2-Chloroethylvinylether	CCAL (none rptd.)
VOCs	UANG-RB3	4624-10	2-Chloroethylvinylether	ICAL (RRF)
VOCs	UANG-RB3	4624-10	2-Butanone	CCAL (%D & RRF)
VOCs	UANG-RB3	4624-10	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-TB5	4624-11	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-TB5	4624-11	2-Butanone	CCAL (%D & RRF)
VOCs	UANG-TB5	4624-11	2-Chloroethylvinylether	ICAL (RRF)
VOCs	UANG-RB2	4608-01	2-Chloroethylvinylether	ICAL (RRF)
VOCs	UANG-RB2	4608-01	2-Butanone	CCAL (%D & RRF)
VOCs	UANG-RB2	4608-01	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-TB4	4608-02	Trichlorofluoromethane	ICAL (RSD&RRF)
VOCs	UANG-TB4	4608-02	2-Chloroethylvinylether	ICAL (RRF)
VOCs	UANG-TB4	4608-02	2-Butanone	CCAL (%D & RRF)

TABLE E.3

EPA QUALIFIERS ASSIGNED TO ANALYTICAL RESULTS

151st AREFG UTAH AIR NATIONAL GUARD

SALT LAKE CITY INTERNATIONAL AIRPORT

SALT LAKE CITY, UTAH

Organic Data Validation Qualifiers

U The analyte is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in this sample (e.g., the reporting limit).

J The analyte is positively identified, but the associated numerical value may not reflect the amount actually present in the environmental sample. The data can be used for many purposes. This data should be seriously considered for decision-making.

R The data are unusable for all purposes. The presence or absence of the analyte has not been verified. Resampling and re-analysis are necessary to confirm or deny its presence.

UJ Combines the "U" and "J" qualifiers. The analyte was not present above the level of the associated value. The associated numerical value may not accurately or precisely represent the concentration in the sample.

N The analysis indicates that an analyte is present. There are strong indications that the identity is correct.

NJ Combines the "N" and "J" qualifiers. The analysis indicates that the analyte is "tentatively identified". The associated numerical value may not reflect the amount actually present in the environmental sample.

Inorganic Data Validation Qualifiers

U The material was not detected above the level of the associated value. The associated value is the project reporting level (*e.g., the non-detect level*).

J The associated value is an estimated quantity [*e.g., the value falls between the method detection limit (MDL) and the practical quantitation limit (PQL)*].

R The data are unusable. *(Note: Analyte may or may not be present.)*

UJ The material was not detected. The associated value is an estimate and may be inaccurate or imprecise.

TABLE E.4
SUMMARY OF HOLDING TIMES FOR ENVIRONMENTAL AND QA SAMPLES
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Sample Identification	Date Sample Collected	DATE ANALYZED-Holding Time in Days: Total Rec. Petroleum Hydrocarbons E418.1 28 days		Volatile Organics 14 days		Semivolatile Organics Extracted 7/14 days(1)		Semivolatile Organics Analyzed 40 days		Mercury 28 days		Pesticides and PCBs Extracted 7/14 days(1)		Pesticides and PCBs Analyzed 40 days		TPH - diesel 8015 Mod. Extracted 14 days(2)		TPH - diesel 8015 Mod. Analyzed 40 days		PH - Gasoline 8015 Mod. Analyzed 14 days	
UANG-PI5 (0-2)	10/22/92	11/3/92	12	11/2/92	13	11/3/92	12	11/6/92	3	11/17/92	26	11/4/92	13	11/23/92	19	--	--	--	--	--	--
UANG-PI5 (6-8)	10/22/92	11/3/92	12	11/3/92	14	11/3/92	14	11/7/92	4	11/17/92	26	11/4/92	13	11/23/92	19	--	--	--	--	--	--
UANG-S2-SB3 (2.5-4.	12/3/92	12/29/92	26	12/15/92	12	12/14/92	11	12/28/92	14	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB3 (4.5-6.	12/3/92	12/29/92	26	12/8/92	5	12/14/92	11	12/23/92	9	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB3 (6.5-8.	12/3/92	12/29/92	26	12/8/92	5	12/14/92	11	12/24/92	10	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB2 (2.5-4.	12/3/92	12/29/92	26	12/8/92	5	12/14/92	11	12/23/92	9	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB2 (4.5-6.	12/3/92	12/29/92	26	12/12/92	9	12/14/92	11	12/24/92	10	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB1 (5-7.5)	12/3/92	12/29/92	26	12/12/92	9	12/14/92	11	12/23/92	9	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB1 (0.5-2.	12/3/92	12/29/92	26	12/12/92	9	12/14/92	11	12/23/92	9	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB1 (2.5-4.	12/3/92	12/29/92	26	12/16/92	13	12/14/92	11	12/28/92	14	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB1 (7-9)	12/3/92	12/29/92	26	12/12/92	9	12/14/92	11	12/28/92	14	12/23/92	20	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB2 (2.5-4.	12/4/92	12/29/92	25	12/12/92	8	12/14/92	10	12/24/92	10	12/23/92	19	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB2 (6.5-9)	12/4/92	12/29/92	25	12/14/92	10	12/14/92	10	12/24/92	10	12/23/92	19	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB3 (2.5-4.	12/4/92	12/29/92	25	12/12/92	8	12/14/92	10	12/24/92	10	12/23/92	19	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB3 (6.5-9)	12/4/92	12/29/92	25	12/14/92	10	12/14/92	10	12/24/92	10	12/23/92	19	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB3 (9-11)	12/4/92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB1 (2.5-4.	12/4/92	12/29/92	25	12/14/92	10	12/14/92	10	12/24/92	10	12/23/92	19	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB1 (6.5-9)	12/4/92	12/29/92	25	12/14/92	10	12/14/92	10	12/24/92	10	12/23/92	19	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB2 (2.5-4.	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/30/92	12	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB2 (6.5-9)	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/28/92	10	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB3 (2.5-4.	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/28/92	10	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB3 (6.5-9)	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/28/92	10	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB4 (2.5-4.	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/28/92	10	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB4 (6.5-9)	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/28/92	10	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB4 (9-11)	12/7/92	1/4/93	28	12/14/92	7	12/18/92	11	12/28/92	10	12/23/92	16	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB1 (0-2)	12/7/92	1/4/93	28	12/15/92	8	12/18/92	11	12/29/92	11	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB1 (6-8)	12/7/92	1/4/93	28	12/15/92	8	12/18/92	11	12/28/92	10	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB2 (6-8.5)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/11/93	20	--	--	--	--	--	--	--	--	--	--	--	--

TABLE E.4 Continued

Sample Identification	Date Sample Collected	DATE ANALYZED-Holding Time in Days: Total Petroleum Hydrocarbons E418.1 28 days		Volatile Organics 14 days		Semivolatile Organics Extracted 7/14 days(1)		Semivolatile Organics Analyzed 40 days		Mercury 28 days		Pesticides and PCBs Extracted 7/14 days(1)		Pesticides and PCBs Analyzed 40 days		Diesel 8015 Mod. Extracted 14 days(2)		Diesel 8015 Mod. Analyzed 40 days		Gasoline 8015 Mod. Analyzed 14 days	
UANG-S5-SB3 (6-8.5)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/12/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB3 (8.5-11	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/12/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB4 (6-8.5)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/11/93	20	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB1 (7-9)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/11/93	20	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB4 (2-4)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/9/93	18	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB1 (2.5-4.	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/12/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB3 (0-2)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/12/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB2 (2-4)	12/8/92	1/5/93	28	12/17/92	9	12/22/92	14	1/9/93	18	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB3 (6.5-9)	12/9/92	1/6/93	28	12/20/92	11	12/22/92	13	1/8/93	17	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB4 (6-8.5)	12/9/92	1/6/93	28	12/20/92	11	12/22/92	13	1/8/93	17	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB4 (8.5-11	12/9/92	1/6/93	28	12/20/92	11	12/22/92	13	1/8/93	17	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB2 (6-8.5)	12/9/92	1/6/93	28	12/21/92	12	12/22/92	13	1/11/93	20	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB4 (0-2)	12/9/92	1/6/93	28	12/21/92	12	12/22/92	13	1/11/93	20	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB3 (0.5-2.	12/9/92	1/6/93	28	12/21/92	12	12/22/92	13	1/11/93	20	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB2 (2-4)	12/9/92	1/6/93	28	12/20/92	11	12/23/92	14	1/11/93	19	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB5 (6-8.5)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB8 (6.5-9)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB7 (6-8.5)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB6 (8.5-11	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB6 (6.5-8)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SS1	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/14/93	22	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SS2	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB6 (2-4)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB7 (2-4)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB8 (2.5-4.	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB5 (0-2)	12/10/92	1/7/93	28	12/21/92	11	12/23/92	13	1/13/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB9 (0-2)	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/14/93	22	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB9 (6-8.5)	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/14/93	22	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB10 (0-2)	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/16/93	24	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB10 (6.0-8	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/14/93	22	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-SB9 (8.5-11	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/14/93	22	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SS4 (North)	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/18/93	26	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SS5 (South)	12/11/92	1/8/93	28	12/21/92	10	12/23/92	12	1/16/93	24	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SS6 (West)	12/11/92	1/8/93	28	12/21/92	10	12/24/92	13	1/16/93	23	--	--	--	--	--	--	--	--	--	--	--	--

TABLE E.4 Continued

Sample Identification	Date Sample Collected	DATE ANALYZED-Holding Time in Days: Total Petroleum Hydrocarbons E418.1 28 days		Volatile Organics 14 days		Semivolatile Organics Extracted 7/14 days(1)		Semivolatile Organics Analyzed 40 days		Mercury 28 days		Pesticides and PCBs Extracted 7/14 days(1)		Pesticides and PCBs Analyzed 40 days		Diesel 8015 Mod. Extracted 14 days(2)		Diesel 8015 Mod. Analyzed 40 days		Gasoline 8015 Mod. Analyzed 14 days	
UANG-S3-SS3 (Smp.3	12/11/92	1/8/93	28	12/21/92	10	12/24/92	13	1/16/93	23	--	--	--	--	--	--	--	--	--	--	--	--
UANG-SB2 (0-2)	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-SB2 (4-6.5)	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-S1-SB1 (0-2)	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-S1-SB1 (4-6.5)	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-S1-SB3 (2-4)	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-S1-SB3 (4-6.5)	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-S1-SB3 (6.5-8.	12/11/92	--	--	--	--	--	--	--	--	--	--	12/24/92	13	1/22/93	29	--	--	--	--	--	--
UANG-S7-SB4 (4.5-6.	12/14/92	1/7/93	24	12/21/92	7	12/24/92	10	1/14/93	21	12/23/92	9	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB5 (4.5-6.	12/14/92	1/7/93	24	12/21/92	7	12/24/92	10	1/16/93	23	12/23/92	9	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB5 (6.5-9)	12/14/92	1/7/93	24	12/21/92	7	12/24/92	10	1/14/93	21	12/23/92	9	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB6 (4-6)	12/14/92	1/7/93	24	12/21/92	7	12/24/92	10	1/14/93	21	12/23/92	9	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB5 (5-7)	12/15/92	1/12/93	28	12/21/92	6	12/29/92	14	1/8/93	10	12/23/92	8	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB5 (7-9)	12/15/92	1/12/93	28	12/21/92	6	12/29/92	14	1/8/93	10	12/23/92	8	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB7 (4.6-6.	12/15/92	1/12/93	28	12/21/92	6	12/29/92	14	1/8/93	10	12/23/92	8	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB6 (2.5-4.	12/15/92	1/12/93	28	12/21/92	6	12/29/92	14	1/8/93	10	12/23/92	8	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB6 (6.5-8.	12/15/92	1/12/93	28	12/21/92	6	12/29/92	14	1/8/93	10	12/23/92	8	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB8 (4.5-6.	12/17/92	1/13/93	27	12/23/92	6	12/31/92	14	1/16/93	17	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB2 (4.5-6.	12/17/92	1/13/93	27	12/23/92	6	12/31/92	14	1/20/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB3 (4-6)	12/17/92	1/13/93	27	12/30/92	13	12/31/92	14	1/21/93	22	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB3 (6-8)	12/17/92	1/13/93	27	12/30/92	13	12/31/92	14	1/18/93	19	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB1 (4-6)	12/17/92	1/13/93	27	12/29/92	12	12/31/92	14	1/18/93	19	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB1 (6-8)	12/17/92	1/13/93	27	12/31/92	14	12/31/92	14	1/18/93	19	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB4 (4.5-6.	12/17/92	1/13/93	27	12/31/92	14	12/31/92	14	1/18/93	19	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB7 (6-8)	12/17/92	1/13/93	27	12/23/92	6	12/31/92	14	1/16/93	17	12/23/92	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB4 (6-8)	12/17/92	1/13/93	27	12/31/92	14	12/31/92	14	1/20/93	21	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB8 (.5-2.5)	12/29/92	1/19/93	21	1/11/93	13	1/11/93	13	1/22/93	11	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB8 (4.5-6.	12/29/92	1/19/93	21	1/11/93	13	1/11/93	13	1/22/93	11	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB9 (2.5-4.	12/29/92	1/19/93	21	1/11/93	13	1/11/93	13	1/22/93	11	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S4-SB9 (4.5-6.	12/29/92	1/19/93	21	1/11/93	13	1/11/93	13	1/26/93	15	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB9 (2.5-4.	12/30/92	1/19/93	20	1/11/93	12	1/11/93	12	1/26/93	15	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB9 (8.5-9.	12/30/92	1/19/93	20	1/11/93	12	1/11/93	12	1/27/93	16	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB9 (4.5-6.	12/30/92	1/19/93	20	1/8/93	9	1/11/93	12	1/26/93	15	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB10 (4.5-6	12/30/92	1/19/93	20	1/8/93	9	1/11/93	12	1/26/93	15	--	--	--	--	--	--	--	--	--	--	--	--

TABLE E.4 Continued

Sample Identification	Date Sample Collected	DATE ANALYZED-Holding Time in Days																			
		Total Petroleum Hydrocarbons E418.1		Volatile Organics		Semivolatile Organics				Mercury		Pesticides and PCBs				Diesel 8015 Mod.				Gasoline 8015 Mod.	
		28 days		14 days		Extracted 7/14 days(1)		Analyzed 40 days		28 days		Extracted 7/14 days(1)		Analyzed 40 days		Extracted 14 days(2)		Analyzed 40 days		Analyzed 14 days	
UANG-S2-SB5 (6.5-8.	12/30/92	1/19/93	20	1/9/93	10	1/11/93	12	1/26/93	15	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S2-SB6 (6.5-8.	12/30/92	1/19/93	20	1/11/93	12	1/11/93	12	1/27/93	16	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-SB5 (4-6)	12/30/92	1/19/93	20	1/8/93	9	1/11/93	12	1/27/93	16	--	--	--	--	--	--	--	--	--	--	--	--
UANG-BG-MW1 (0.-2	1/13/93	1/21/93	8	1/26/93	13	1/25/93	12	2/1/93	7	1/27/93	14	1/25/93	12	2/19/93	25	--	--	--	--	--	--
UANG-BG-MW1 (4-6)	1/13/93	1/21/93	8	1/25/93	12	1/2[illegible]/93	12	1/27/93	2	1/27/93	14	1/25/93	12	2/19/93	25	--	--	--	--	--	--
UANG-BG-MW1-1	1/29/93	--	--	2/3/93	5	2/1/93	3	2/2/93	1	2/26/93	14	--		2/8/93	10	--	--	--	--	--	--
UANG-S1-MW1-3	2/1/93	--	--	--	--	--	--	--	--	--	--	2/4/93	3	2/20/93	16	--	--	--	--	--	--
UANG-S1-MW2-2	2/1/93	--	--	--	--	--	--	--	--	--	--	2/4/93	3	2/20/93	16	--	--	--	--	--	--
UANG-S2-MW1-4	2/2/93	--	--	2/12/93	10	2/3/93	1	2/10/93	7	2/18/93	16	--	--	--	--	--	--	--	--	--	--
UANG-S3-MW3-5	2/2/93	--	--	2/11/93	9	2/3/93	1	2/10/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-MW1-6	2/2/93	--	--	2/11/93	9	2/3/93	1	2/10/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S3-MW2-7	2/2/93	--	--	2/11/93	9	2/3/93	1	2/10/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-MW1-11	2/3/93	--	--	2/12/93	9	2/5/93	2	2/10/93	5	12/18/93	15	--	--	--	--	--	--	--	--	--	--
UANG-S4-MW1-9	2/3/93	--	--	2/12/93	9	2/5/93	2	2/10/93	5	12/18/93	15	--	--	--	--	--	--	--	--	--	--
UANG-S7-MW2-12	2/3/93	--	--	2/12/93	9	2/5/93	2	2/12/93	7	12/18/93	15	--	--	--	--	--	--	--	--	--	--
UANG-S6-MW3-18	2/4/93	--	--	2/17/93	13	2/5/93	1	2/12/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-MW1-16	2/4/93	--	--	2/17/93	13	2/5/93	1	2/12/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-MW1-10	2/4/93	--	--	2/17/93	13	2/5/93	1	2/16/93	11	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S6-MW2-17	2/4/93	--	--	2/17/93	13	2/5/93	1	2/12/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB6 (1-3)	2/8/93	2/16/93	8	2/22/93	14	2/11/93	3	2/19/93	8	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB6 (5-7)	2/8/93	2/16/93	8	2/22/93	14	2/11/93	3	2/19/93	8	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB7 (1-3)	2/8/93	2/16/93	8	2/22/93	14	2/11/93	3	2/19/93	8	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S7-SB7 (5-7)	2/8/93	2/16/93	8	2/22/93	14	2/11/93	3	2/17/93	6	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB7 (1-3)	2/9/93	2/16/93	7	2/23/93	14	2/11/93	2	2/19/93	8	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB7 (5-7)	2/9/93	2/16/93	7	2/23/93	14	2/11/93	2	2/17/93	6	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB5 (1-3)	2/9/93	2/16/93	7	2/23/93	14	2/11/93	2	2/19/93	8	2/18/93	9	--	--	--	--	--	--	--	--	--	--
UANG-S5-SB5 (5-7)	2/9/93	2/16/93	7	2/23/93	14	2/11/93	2	2/17/93	6	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S2-MW1	2/10/93	2/16/93	6	2/24/93	14	2/11/93	1	2/17/93	6	--	--	--	--	--	--	--	--	--	--	--	--
UANG-CW1	2/11/93	2/16/93	5	2/24/93	13	2/12/93	1	2/17/93	5	3/1/93	18	2/17/93	6	2/25/93	8	--	--	--	--	--	--
UANG-CW2	2/11/93	2/16/93	5	2/24/93	13	2/12/93	1	2/18/93	6	3/1/93	18	2/17/93	6	3/1/93	12	--	--	--	--	--	--
UANG-CW3	2/11/93	2/16/93	5	2/24/93	13	2/12/93	1	2/17/93	5	3/1/93	18	2/17/93	6	3/2/93	13	--	--	--	--	--	--
UANG-CW4	2/11/93	2/16/93	5	2/24/93	13	2/12/93	1	2/17/93	5	3/1/93	18	2/17/93	6	3/2/93	13	--	--	--	--	--	--
UANG-CS1	2/12/93	2/19/93	7	2/26/93	14	2/17/93	5	2/24/93	7	3/2/93	18	2/18/93	6	3/5/93	15	--	--	--	--	--	--
UANG-CS2	2/12/93	2/19/93	7	2/26/93	14	2/17/93	5	2/24/93	7	3/2/93	18	2/18/93	6	3/5/93	15	--	--	--	--	--	--

TABLE E.4 Continued

Sample Identification	Date Sample Collected	DATE ANALYZED-Holding Time in Days: Total Petroleum Hydrocarbons E418.1 28 days		Volatile Organics 14 days		Semivolatile Organics Extracted 7/14 days(1)		Semivolatile Organics Analyzed 40 days		Mercury 28 days		Pesticides and PCBs Extracted 7/14 days(1)		Pesticides and PCBs Analyzed 40 days		Diesel 8015 Mod. Extracted 14 days(2)		Diesel 8015 Mod. Analyzed 40 days		Gasoline 8015 Mod. Analyzed 14 days	
UANG-CS3	2/12/93	2/19/93	7	2/26/93	14	2/17/93	5	2/23/93	6	3/2/93	18	2/18/93	6	3/5/93	15	--	--	--	--	--	--
UANG-CS4	2/12/93	2/19/93	7	2/26/93	14	2/17/93	5	2/23/93	6	3/2/93	18	2/18/93	6	3/5/93	15	--	--	--	--	--	--
UANG-CS5	2/12/93	2/19/93	7	2/26/93	14	2/17/93	5	2/23/93	6	3/2/93	18	2/18/93	6	3/4/93	14	--	--	--	--	--	--
UANG-CS6	2/12/93	2/19/93	7	2/26/93	14	2/18/93	6	2/23/93	5	3/2/93	18	2/18/93	6	3/5/93	15	--	--	--	--	--	--
UANG-CS7	2/12/93	2/19/93	7	2/26/93	14	2/17/93	5	2/24/93	7	3/2/93	18	2/18/93	6	3/5/93	15	--	--	--	--	--	--
UANG-S10-SB1 (2-4)	5/25/94	6/08/94	12	6/06/94	10	--	--	--	--	--	--	--	--	--	--	6/8/94	14	6/11/94	3	6/8/94	14
UANG-S10-SB1 (6-8)	5/25/94	6/08/94	12	6/06/94	10	5/28/94	3	5/30/94	5	--		6/29/94	35	6/30/94	1	6/8/94	14	6/11/94	3	6/8/94	14
UANG-S10-SB1 (8-10)	5/25/94	--	--	5/26/94	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-S10-SB2 (2-4)	5/26/94	6/07/94	10	6/08/94	11	--	--	--	--	--	--	--	--	--	--	6/8/94	13	6/11/94	3	6/7/94	12
UANG-S10-SB2 (4-6)	5/26/94	6/08/94	11	6/08/94	11	--	--	--	--	--	--	--	--	--	--	6/8/94	13	6/11/94	3	6/7/94	12
UANG-S10-SB3 (1-3)	5/26/94	6/08/94	11	6/06/94	9	--	--	--	--	--	--	--	--	--	--	6/8/94	13	6/11/94	3	6/7/94	12
UANG-S10-SB3 (3-5)	5/26/94	6/07/94	10	6/06/94	9	--	--	--	--	--	--	--	--	--	--	6/8/94	13	6/11/94	3	6/7/94	12
UANG-S10-SB4 (2-4)	5/26/94	6/07/94	10	6/06/94	9	--	--	--	--	--	--	--	--	--	--	6/8/94	13	6/11/94	3	6/7/94	12
UANG-S10-SB4 (4-6)	5/26/94	6/08/94	11	6/06/94	9	--	--	--	--	--	--	--	--	--	--	6/8/94	13	6/11/94	3	6/8/94	13
UANG-S1-SB4 (3.5-5.	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB4 (7.5-9.	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB5 (1-3)	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB5 (5-7)	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB6 (1-3)	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB6 (3-5)	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB6 (5-7)	10/26/94	--	--	11/09/94	14	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB7 (1-3)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB7 (5-7)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/23/94	26	--	--	--	--	--	--
UANG-S1-SB8 (1-3)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-S1-SB8 (5-7)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-S1-SB8 (7-9)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-S1-SB9 (3-5)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-S1-SB9 (5-7)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-S1-SB10 (1-3)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-S1-SB10 (3-5)	10/26/94	--	--	11/10/94	15	--	--	--	--	--	--	10/28/94	2	11/24/94	27	--	--	--	--	--	--
UANG-TB2	12/2/92	--	--	12/15/92	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB3	12/4/92	--	--	12/16/92	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB4	12/7/92	--	--	12/16/92	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB5	12/8/92	--	--	12/17/92	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE E.4 Continued

Sample Identification	Date Sample Collected	DATE ANALYZED-Holding Time in Days: Total Petroleum Hydrocarbons E418.1 28 days		Volatile Organics 14 days		Semivolatile Organics Extracted 7/14 days(1)		Semivolatile Organics Analyzed 40 days		Mercury 28 days		Pesticides and PCBs Extracted 7/14 days(1)		Pesticides and PCBs Analyzed 40 days		Diesel 8015 Mod. Extracted 14 days(2)		Diesel 8015 Mod. Analyzed 40 days		Gasoline 8015 Mod. Analyzed 14 days	
UANG-TB6	12/9/92	--	--	12/20/92	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB7	12/10/92	--	--	12/24/92	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB8	12/10/92	--	--	12/24/92	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB9	12/14/92	--	--	12/24/92	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB10	12/15/92	--	--	12/24/92	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB2 (16)	1/13/93	--	--	1/20/93	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB-BG-1	1/29/93	--	--	2/3/93	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB11	12/16/92	--	--	12/30/92	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB12	12/17/92	--	--	12/31/92	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB14	12/29/92	--	--	1/5/93	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB15	12/30/92	--	--	1/5/93	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB17	2/1/93	--	--	2/11/93	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB18-GW	2/3/93	--	--	2/12/93	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB19	2/4/93	--	--	2/17/93	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB20	2/9/93	--	--	2/22/93	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB21	2/10/93	--	--	2/24/93	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-TB22	2/11/93	--	--	2/24/93	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-FB1	12/11/92	1/6/93	26	12/24/92	13	12/16/93	5	12/22/93	6	12/27/93	16	--	--	--	--	--	--	--	--	--	--
UANG-FB2	2/1/93	--	--	--	--	--	--	--	--	--	--	2/4/93	3	2/20/93	16	--	--	--	--	--	--
UANG-FB4	1/29/93	--	--	--	--	2/3/93	5	2/9/93	6	--	--	2/4/93	6	2/19/93	15	--	--	--	--	--	--
UANG-FB5-8	2/2/93	--	--	2/11/93	9	2/3/93	1	2/10/93	7	2/18/93	16	2/4/93	2	2/20/93	16	--	--	--	--	--	--
UANG-FB6-15	2/3/93	--	--	2/12/93	9	2/5/93	2	2/10/93	5	2/18/93	15	--	--	--	--	--	--	--	--	--	--
UANG-FB7-19	2/4/93	--	--	2/17/93	13	2/5/93	1	2/12/93	7	2/18/93	14	2/8/93	4	2/19/93	11	--	--	--	--	--	--
UANG-FB8	2/11/93	2/16/93	5	2/24/93	13	2/12/93	1	2/17/93	5	3/1/93	18	2/17/93	6	2/25/93	8	--	--	--	--	--	--
UANG-FB9	2/12/93	2/19/93	7	2/25/93	13	2/16/93	4	2-18-93	2	3/1/93	17	2/17/93	5	2/25/93	8	--	--	--	--	--	--
UANG-CS-FB-10	2/12/93	2/19/93	7	2/25/93	13	2/16/93	4	2/18/93	2	3/1/93	17	2/17/93	5	2/25/93	8	--	--	--	--	--	--
UANG-RB1	12/4/92	12/30/92	26	12/16/92	12	12/9/92	5	12/19/09	10	12/27/92	23	--	--	--	--	--	--	--	--	--	--
UANG-RB2-S4	12/7/92	12/30/92	23	12/17/92	10	12/10/92	3	12/19/92	9	12/27/92	20	--	--	--	--	--	--	--	--	--	--
UANG-RB3-55	12/8/92	1/5/93	28	12/17/92	9	12/12/92	4	12/19/92	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-RB4-S6	12/9/92	1/5/93	27	12/20/92	11	12/12/92	3	12/19/92	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-RB5-S6	12/10/92	1/6/93	27	12/24/92	14	12/15/92	5	12/19/92	4	--	--	--	--	--	--	--	--	--	--	--	--
UANG-RB6-S1	12/11/92	--	--	--	--	--	--	--	--	--	--	2/16/93	5	12/30/92	14	--	--	--	--	--	--
UANG-RB7-S6	12/11/92	1/6/93	26	12/24/92	13	12/16/92	5	12/22/92	6	--	--	--	--	--	--	--	--	--	--	--	--
UANG-RB8-S7	12/14/93	1/6/93	23	12/24/92	10	--	2	12/23/92	7	--	--	--	--	--	--	--	--	--	--	--	--

724017\E-4.xls

TABLE E.4 Continued

Sample Identification	Date Sample Collected	Total Petroleum Hydrocarbons E418.1 28 days		Volatile Organics 14 days		Semivolatile Organics Extracted 7/14 days(1)		Semivolatile Organics Analyzed 40 days		Mercury 28 days		Pesticides and PCBs Extracted 7/14 days(1)		Pesticides and PCBs Analyzed 40 days		Diesel 8015 Mod. Extracted 14 days(2)		Diesel 8015 Mod. Analyzed 40 days		Gasoline 8015 Mod. Analyzed 14 days	
		DATE ANALYZED-Holding Time in Days																			
UANG-RB9-S3	12/14/92	1/13/93	26	1/1/93	14	12/16/92	4	12/30/92	8	--	--	--	--	--	--	--	--	--	--	--	--
UANG-BGRB-1	1/29/93	--	--	2/3/93	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UANG-RB5-S1	2/1/93	--	--	--	--	--	--	--	--	--	--	2/4/92	3	2/20/93	16	--	--	--	--	--	--
UANG-RB6-S3	2/2/93	--	--	2/11/93	9	2/3/93	1	2/10/93	7	12/27/92	13	--	--	--	--	--	--	--	--	--	--
UANG-S7MW1-EQR1	2/3/93	--	--	2/12/93	9	2/5/93	2	2/10/93	5	2/18/93	15	--	--	--	--	--	--	--	--	--	--
UANG-S7MW2-EQR1	2/3/93	--	--	2/12/93	9	2/5/93	2	2/10/93	5	2/18/93	15	--	--	--	--	--	--	--	--	--	--
UANG-MW3-EQR20	2/4/93	--	--	2/17/93	13	2/5/93	1	2/12/93	7	--	--	--	--	--	--	--	--	--	--	--	--
UANG-CW3-EQR	2/11/93	2/16/93	5	2/24/93	13	2/12/93	1	2/17/93	5	3/1/93	18	2/17/93	6	2/25/93	8	--	--	--	--	--	--
UANG-CS-EQR	2/12/93	2/16/93	7	2/25/93	13	2/16/93	4	2/18/93	2	3/1/93	18	2/17/93	5	2/25/93	8	--	--	--	--	--	--
UANG-S1-FB3	10/26/94	--	--	--	--	--	--	--	--	--	--	11/1/94	6	11/18/94	17	--	--	--	--	--	--
UANG-S1-RB3	10/26/94	--	--	--	--	--	--	--	--	--	--	11/1/94	6	11/18/94	17	--	--	--	--	--	--
UANG-S1-FB4	10/26/94	--	--	--	--	--	--	--	--	--	--	11/1/94	6	11/18/94	17	--	--	--	--	--	--
UANG-S10-TB1	5/25/94	--	--	6/6/94	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(1) Seven day extraction after collection for water, 14 day extraction after collection for soil.

E.2 QUALITY CONTROL ASSESSMENT

E.2.1 METALS ANALYSIS USING EPA METHODS SW6010, SW7060, SW7421, SW7470/71, SW7740, and SW7841

E.2.1.1 Introduction

Three types of instrumentation were used to analyze 94 field samples for the 13 priority pollutant metals included in the analytical program. The samples included 29 aqueous and 65 soil/sediment samples. ICP analysis was performed for all metal analytes (SW6010) except arsenic (As), lead (Pb), selenium (Se), thallium (Tl), and mercury (Hg). The aqueous sample from UANG-BG-MW1, due to a miscommunication between ES Berkeley Laboratory and DataChem Laboratory resulted in all analysis being performed by ICP. The GFAA method was employed to analyze as (SW7060), Pb (SW7421), Se (SW7740), and Tl (SW7841) in selected samples because the instrument detection limit (IDL) of the GFAA accommodates low-concentration levels for these elements. A cold-vapor technique, using a flameless atomic absorption (CVAA) spectrophotometer, was used to analyze Hg (SW7470/71).

E.2.1.2 Technical Holding Times

Holding times were measured from the date of collection to the date of analysis. Chain-of-custody forms were used to verify technical holding times. The specified holding times for preserved aqueous and soil/sediment samples for metals are 28 days for mercury and 180 days for all other analytes. All samples met technical holding times.

E.2.1.3 Initial and Continuing Calibration Verification

The ICAL for ICP must include one blank and two standards per curve. The GFAA ICAL requires a blank and three standards, one of which represents the contract required detection limit (CRDL). The ICAL curve for CVAA calibration requires one blank and four standards per curve. The curves generated by the ICALs must produce a linear least squares correlation coefficient (r) greater than or equal to 0.995 for the GFAA analyses.

To verify the accuracy of the ICAL, an ICV standard (prepared from a standard source other than the source used to prepare the ICAL standards) is analyzed. A CCV standard, of a known concentration, must be analyzed at a 10% frequency for all analytes and after the last analytical sample in each run. The accuracy of the ICV and the CCV is based on the percent recoveries (%R). The %R range criterion is 80-120% for Hg and 90-110% for all other metals. All ICV and CCV results met control criterion except for one sample which was qualified as "UJ" due to the %R of the As results falling outside of QC limits.

E.2.1.4 Blanks

One laboratory blank must be analyzed for every ten samples and after each CCV for GFAA analysis. Qualification of analytes in field samples is required if identifiable quantities of target compounds are found in the laboratory blanks and the analytical results are less than five times the absolute value of the blank results.

Small concentrations of contaminants (greater than the MDL but less than the CRDL) were reported in several of the laboratory blanks. This resulted in the qualification of 71 samples as "J", "U", or "UJ". In some cases, when contaminants were detected, no qualifications were required since the sample analytes had concentrations greater than five times the blank contaminant concentration.

Field QC blanks were analyzed to verify that no contamination occurred during sampling. These field QC blanks (analyzed for this fraction) were equipment rinseate blanks and field blanks. All field blanks showed some of the following analytes: cadmium (Cd), chromium (Cr), copper (Cu), Pb, and zinc (Zn). Ten sample results were qualified as "U" because most samples had relatively high concentrations of these analytes.

E.2.1.5 Matrix Spike/Matrix Spike Duplicates

An MS or MSD must be included for every ten samples (one MS/MSD pair per 20 samples), for each matrix analyzed. Spiked-sample analysis provides information about the effect of each sample matrix on digestion and measurement methodologies. Samples identified as field blanks cannot be used for spiked-sample analysis. The %R values for all elements must be within the limits of 75-125%. If the measured %R value falls outside of this range, all associated samples must be qualified as estimated. If the analytical results for an analyte still fall below 30%, these results must be rejected in all associated samples.

As part of the inorganic metals analysis, three aqueous and five soil/sediment MS/MSDs were analyzed. The 10% frequency requirement for both matrices was met. The %R fell outside of QC criteria for several MS/MSDs requiring the qualification of 68 sample values as "J", "U", or "UJ" due to possible matrix interference. The %R of the MS/MSDs were less than 30% warranting rejection of specific analytes in several MS/MSDs. Rejected "R" flags were applied to 21 associated samples for possible matrix effects on Tl, 15 associated antimony (Sb) results, and 13 associated Se results. The "R" qualification of these analytes affected a total of 49 samples.

E.2.1.6 Interference Check Sample

The ICS verifies the laboratory's ICP inter-element and background correction factors. The ICS solution A and ICS solution AB must be analyzed at the beginning and end of each analysis run. The ICS solution AB recovery results must fall within the control range of 80-120%. The concentrations of aluminum, calcium, iron, and magnesium in the samples must be less than 2/3 of their respective concentrations in the ICS solutions. All ICS results met the required criteria.

E.2.1.7 Laboratory Control Samples

An LCS is a laboratory reagent blank spiked with known concentrations of target analytes and is processed with samples through sample preparation procedures. LCS spike recovery indicate accuracy relevant to all samples and matrices within an analytical batch lot and are strictly a measure of analytical accuracy conditions independent of samples and matrices. A successful result requires that the %Rs for all analytes fall within the control limits of 80-120%. Three sample results for lead were qualified as "J" or "UJ" for the LCS exceeding the %R criteria.

E.2.1.8 Duplicate Sample Analysis

One laboratory duplicate sample is analyzed for every 10 samples and for each matrix in the sample delivery group (SDG). The resulting relative percent difference (RPD) should be less than or equal to 20% for aqueous samples and less than or equal to 35% for soil and sediment samples, where measured analyte results are greater than five times the CRDL. Therefore, samples that are identified as field blanks are not used. Duplicate analyses are indicators of overall precision based on each sample matrix. For duplicate analyte concentrations less than five times the CRDL, the difference between the two reported results should be less than the CRDL for aqueous samples and two times the CRDL for soil/sediment samples.

A total of 33 samples did not meet the above criteria and were qualified as either "J" or "UJ". Twenty-four samples were qualified due to the As percent difference between the primary and duplicate samples exceeding QC limits. Nine samples were qualified due to Pb exceeding QC limits.

Field duplicates are analyzed to determine the representativeness of sampling procedures. One member of the duplicate pair is given a coded (false) identifier so that the sample analysis is not biased. Six sets of field duplicates were analyzed for metals and 12 of the 13 metals were detected. Five individual analyte comparisons between the primary and duplicate samples exceeded QC limits for percent difference. Analytical results are not qualified because of duplicate results.

E.2.1.9 ICP Serial Dilution

One serial dilution is performed for every ten samples and for each matrix. A serial dilution is performed for metals analyzed by ICP to determine if any physical or chemical interference's exist in the sample matrix. If the concentration in the original sample is greater than 50 times the IDL, a five-fold dilution must agree within ± 10% of the difference between the dilution and the original result. Fifty seven samples were qualified as "J" or "UJ" because Cr and/or Zn values did not meet serial dilution criteria.

E.2.1.10 Furnace Atomic Absorption

GFAA duplicate injections percent relative standard deviation (%RSD) must be less than 20% with post digestion spike %R between 85-115%. If the sample's analyte recovery is less than 40% the sample should be diluted once and re-analyzed. For the method of standard addition (MSA), the r value must be greater than or equal to 0.995. A total of 72 samples were qualified as either "J" or "UJ" because analytical spike recoveries fell outside QC limits.

E.2.1.11 Furnace Atomic Absorption QC

The analytical results detected a significant number of heavy metals, particularly As, Cd, Cr, Cu, Pb, and Zn.

E.2.2 VOLATILE ORGANICS ANALYSIS USING EPA METHOD SW8240

E.2.2.1 Introduction

Thirty-nine target analytes were analyzed by gas chromatography/mass spectrometry (GC/MS). Sixty-one field samples composed of 52 soil samples and 9 aqueous samples were evaluated based on technical holding time results, GC/MS instrument performance checks, ICALs, CCALs, blanks, system monitoring compounds (surrogates), MS/MSDs, and LCS/LCSDs.

E.2.2.2 Technical Holding Times

The maximum allowable holding time for preserved water samples and soil samples is 14 days from the date of collection to VOC analysis. All samples met holding time criteria.

E.2.2.3 GC/MS Instrument Performance Check

The instrument performance checks (also called tunings) are performed to ensure mass resolution, compound identification, and, to some degree, instrument sensitivity. Using bromofluorobenzene (BFB) as the check solution. All samples met ion abundance criteria. A check was performed every 12 hours, as required.

TABLE E.5

GC/MS INSTRUMENT PERFORMANCE CHECK

USING BROMOFLUORORBENZENE

ION ABUNDANCE CRITERIA

Bromofluorobenzene m/z	ion abundance criteria
50	15-40.0% of m/z 95
75	30.0-60.0% of m/z 95
95	Base peak, 100% relative abundance
96	5.0-9.0% of m/z 95
173	Less than 2.0% of m/z 174
174	>50.0% of m/z 95
175	5.0-9.0% of m/z 174
176	95.0-101.0% of m/z 174
177	5.0-9.0% of m/z 176

E.2.2.4 Initial Calibration

The ICAL is based on a 5-point standard calibration curve at concentrations of 10, 20, 50, 100, and 200µg/L, using standards containing both target compounds, internal

standards, and system monitoring compounds. Sample results are quantified using the relative response factor (RRF) of the ICAL, for samples analyzed within the ICAL sequence preceding analysis of a CCAL. Sample results are quantified using the RRF of the CCAL for samples analyzed within the CCAL 12-hour sequence. A mean RRF of greater than 0.05 must be maintained. The RRF %RSD result must be less than or equal to 30 for all compounds to meet data validation criteria. Sample results were qualified for minimum RRF results based on the CCAL from which the values were quantified. If the %RSD for a compound was greater than or equal to 30%, positive results were qualified as estimated, "J". Non-detected volatile target compounds were qualified as estimated non-detects, "UJ". For any ICAL mean RRF less than 0.05, positive results were qualified as estimated, "J". Non-detected analytes were qualified as unusable, "R". Twelve samples were qualified as estimated, "J" or "UJ" due to acetone and/or chloroethane exceeding QC limits. In almost every sample, 2-chloroethylvinylether did not meet the minimum RRF criteria and was qualified as unusable, "R". Thirty-seven other analytes were qualified as "R" twenty-nine as 2-Chloroethylvinylether and eight as Trichlorofluoromethane.

E.2.2.5 Continuing Calibration

A CCAL must be analyzed at the beginning of each 12-hour analysis period after the instrument performance check and before the analysis of any blanks or samples. The relative response factor for each target analyte must be >0.05. The percent difference (%D) between the mean ICAL RRF and the CCAL RRF for each compound must be within ± 25%. A total of 42 samples were qualified as "J" or "UJ" due to acetone and several other target analytes exceeding quality control limits.

E.2.2.6 Blanks

Samples associated with blanks (laboratory and field) containing target analytes with concentrations less than 10 times the blank concentration for common laboratory contaminants (methylene chloride, acetone, 2-butanone, and toluene) and 5 times the blank concentration for other contaminants are qualified as undetected, "U".

Laboratory blanks were analyzed for possible laboratory sample contamination. A total of 25 samples were qualified as "U" due to acetone contamination in laboratory blanks. The presence of methylene chloride in the laboratory blank qualified one sample as non-detected "U".

Field QC blanks analyzed for this fraction included equipment rinseate blanks, field blanks, and trip blanks. Field QC blanks were analyzed to verify that no contamination of the samples occurred during sampling and shipping. Chloroform was detected in four equipment rinseate blanks; however, results were not qualified as all the related field samples showed no presence of chloroform.

The trip blank (TB1) collected and associated with sample S10-SB1-8-10, was not delivered to the laboratory at the same time the sample was delivered. The analysis of sample S10-SB1-8-10 indicated a low level of benzene in addition to methylene chloride. The trip blank TB1 contained a low level of methylene chloride. Benzene is believed to be representative of the sample site.

E.2.2.7 System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with system monitoring compounds prior to sample purging. The surrogates used were toluene-d_8 (TOL), BFB, and 1,2-dichloroethane-d_4 (DCE). Two samples exceeded the %R criteria resulting in "J" qualifications. Table E.6 below, indicates the surrogate recovery ranges.

TABLE E.6

SYSTEM MONITORING COMPOUND CRITERIA

System Monitoring Compounds	Water %R	Soil %R
Toluene-d_8 (TOL)	88-110	87-138
Bromofluorobenzene (BFB)	86-115	82-113
1,2-Dichloroethane-d_4 (DCE)	76-114	79-121

E.2.2.8 Matrix Spike/Matrix Spike Duplicates

Data from MS/MSDs are generated to determine the long-term precision and accuracy of the analytical method for various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone are not used to evaluate the precision and accuracy of other samples. Four soil MS/MSDs were analyzed for this fraction. The %R and RPD criteria for 1,1-dichloroethene, trichloroethene, benzene, toluene, and chlorobenzene were met for the applicable MS/MSD results.

TABLE E.7

MS/MSD CRITERIA FOR VOLATILE ANALYSIS

	Water		Soil	
	%R	RPD	%R	RPD
1,1-Dichloroethene	61-145	14	59-172	22
Trichloroethene	71-120	14	62-137	24
Benzene	76-127	11	66-142	21
Toluene	76-125	13	59-139	21
Chlorobenzene	75-130	13	60-133	21

E.2.2.9 Laboratory Control Spikes/Laboratory Control Spike Duplicates

LCS/LCSDs are to be performed for every 10 samples analyzed to check the proficiency of the analysis. Control criteria for the LCS/LCSD are the same as for the

MS/MSD are listed in Table E.7 above. This data can determine if the MS/MSD is out of control, whether the cause is a system problem or a matrix effect. The LCS/LCSD was not analyzed for every 10 samples because it is not required by SW846, except in the cases where the MS/MSD is out of control limits. All LCS/LCSDs met control criteria.

E.2.2.10 Field Duplicates

Field duplicates are analyzed to determine the representativeness of sampling procedures. Of each duplicate pair, one is given a coded (false) identifier so that the laboratory results will not be biased. A total of four field duplicate pairs were analyzed for this fraction. Eight analytes were detected and all but one analyte comparison for RPD (%) or difference was within QC limits. Samples are not qualified due to duplicate results.

E.2.3 PURGABLE HALOGENATED VOLATILE ORGANIC AND PURGABLE AROMATIC VOLATILE ORGANIC ANALYSES BY GC USING METHODS SW8010 AND SW8020

E.2.3.1 Introduction

The EPA methods SW8010 and SW8020 require analysis by gas chromatograph (GC). The laboratory analyzed 138 field samples: 51 aqueous and 87 soil/sediment samples for 36 target analytes (using method SW8010) and eight target analytes (using method SW8020). The laboratory QC data were reviewed for technical holding times, ICALs, CCALs, blank concentration, surrogate spikes, MS/MSDs, and LCSs.

E.2.3.2 Technical Holding Times

The required holding times for both analytical methods is 14 days. All samples analyzed by the SW8010/SW8020 methods met holding times except the field samples from the second sampling event at Site 1, which were all analyzed within 10-25 hours past the 14 day limit. Samples include: UANG-SB7(1-3), UANG-SB7(5-7), UANG-SB8(5-7), UANG-SB8(7-9), UANG-SB9(3-5), UANG-SB9(5-7), UANG-SB10(1-3), UANG-SB10(3-5), UANG-SB8(1-3), UANG-SB8(1-3)MS, and UANG-SB8(1-3)MSD. These samples were qualified as estimated, "J" or "UJ", because they exceeded the specified holding time. UANG-S3-RB9 (Laboratory I.D. 4683-01), exceeded the 12-hour limit by 17 minutes. Since the time limit was only slightly exceeded and no analytes were detected, the results were not qualified.

E.2.3.3 Initial Calibration

A five-point ICAL is performed for each compound at concentrations of 5, 10, 15, 20, and 40 µg/L, that establishes the daily retention time (RT) window. The resulting RRF %RSDs must be less than or equal to 20%, or the linear regression r value must be less than or equal to 0.995. All ICAL determinations met these criteria with the exception of chloromethane which had an r value less than the specified limit. This resulted in the qualification of 24 soil samples and three water samples as estimated, "J" or "UJ", for chloromethane.

E.2.3.4 Continuing Calibration

A mid-range CCAL standard containing all the target compounds must be analyzed at the beginning of each 12-hour analysis period or one per ten samples, whichever is more frequent. The CCAL was analyzed following the analysis of the instrument performance check and prior to the analysis of any blanks or samples. The %D between the mean ICAL RRF and the CCAL RRF for each compound must be within ±15%, with the peak midpoint within the daily RT window established by the ICAL. Twenty samples were qualified as "J" or "UJ" due to CCAL analytes exceeding the %D in the SW8010/SW8020 methods.

For samples collected during the second sampling event at Site 1, a %D limit of +/- 15% was used as a criterion for continuing calibration. Ten compounds exceeded this criterion resulting in the qualification of two samples as estimated, "J" or "UJ".

E.2.3.5 Blanks

One laboratory method blank must be analyzed for every 10 samples and for each matrix type in every SDG. If a blank is contaminated with target compounds and the associated samples contain less than 10 times the blank concentration of compounds considered to be common laboratory contaminants, or less than five times the blank concentration for other target compounds, the analyte is qualified as undetected. All method blanks were free of target analytes.

Blanks provide a measure of contamination that may have been introduced into a sample set during the field work, while samples were being collected or transported to the laboratory, or in the laboratory during sample preparation and analysis. Each blank is discussed in more detail in Section E.2.7. QC blanks analyzed for this fraction included equipment rinseate blanks, field blanks, and trip blanks. The association of these blanks with their respective samples is given in Table E.19.

There were no trip blanks, rinseate blanks, or field blanks analyzed with the samples collected from the second sampling event at Site 1. Only one out of the 16 samples had a target detect. Data quality is not believed to have been compromised. The trichloroethene in sample SB9(5-7) is indicative of site contamination because this compound is not considered a common laboratory contaminant. The introduction of trichloroethene through field contamination would most likely have affected more than one sample.

E.2.3.6 Surrogate Spikes

Bromochloromethane (BRCLM), Chlorofluorobenzene (CLFLB) and H-2,6-Dichlorotoluene were used as surrogates for method SW8010 with a,a,a-Trifluorotoluene (TRIFL Toluene) used as the surrogate for method SW8020. An acceptance range of 50-150% was used as the surrogate spike recovery criterion for both methods. Surrogate spike recoveries were within control criteria exception for one sample, UANG-SB7(1-7), which had a surrogate recovery of 42.7%. Re-analysis of this sample yielded a similar result. This sample was qualified as estimated, "J" or "UJ".

E.2.3.7 Matrix Spike/Matrix Spike Duplicates

For every 10 samples analyzed, an MS or MSD must be analyzed (one MS/MSD pair per 20 samples). The MS/MSD measures the precision and accuracy of the laboratory and the potential presence of matrix interference's. Qualification of the field samples is not based on the results of the MS/MSD alone.

The MS/MSD criteria for both methods is presented in the following Tables E.8 and E.9 and was met in all cases for all analytes. Three water and five soil MS/MSDs were analyzed meeting the criteria of one MS/MSD per 20 samples.

TABLE E.8

PACE LABORATORY MS/MSD CRITERIA

	Soil/Sediment		Aqueous	
Compound	**RPD**	**%R**	**RPD**	**%R**
SW8010 Analysis				
1,1-Dichloroethene	47	28-167	47	28-167
Trichloroethene	30	35-146	30	35-146
Chlorobenzene	35	38-150	35	38-150
SW8020 Analysis				
Benzene	29	39-150	29	39-150
Toluene	28	46-148	28	46-148
Chlorobenzene	25	55-135	25	55-135

TABLE E.9

DATACHEM LABORATORY MS/MSD CRITERIA

	Soil/Sediment		Aqueous	
Compound	**RPD**	**%R**	**RPD**	**%R**
SW8010 Analysis				
Chloroform	50	39-150	50	39-150
Tetachloroethene	50	39-150	50	39-150
Trichloroethene	50	39-150	50	39-150
trans-1,2-Dichloroethene	50	39-150	50	39-150

E.2.3.8 Laboratory Control Sample

An LCS was required for every 10 samples or for each SDG, whichever was more frequent. The LCS recovery criterion for methods SW8010/SW8020 is the same as for the MS/MSD. Data are only qualified as a result of the LCS if the MS/MSD percentage recovery is out of control. The LCS requirements met required criteria in all cases and no results were qualified due to the combined results of the MS/MSD and the LCS.

E.2.3.9 Field Duplicates

Field duplicates are analyzed to determine the representativeness of sampling procedures. Out of each duplicate pair, one is given a coded (false) identifier so that the laboratory results will not be biased. Eight field duplicates were analyzed for this fraction. Nine analytes were detected. All but two individual analyte percent comparisons between the primary and the duplicate were within QC limits. Two field duplicates were collected during the sampling event. No analytes were detected in any of the duplicate pairs. Samples are not qualified due to duplicate results.

E.2.3.10 Additional Comments

Based on the case narrative for SDG S94-0681-ED, the request for SW8010 analysis was made six days after sample receipt by the laboratory. Sample volume from the PESTs/PCBs sample containers was used for the SW8010 analysis. The sample containers had been opened and a quantity extracted previously for Pesticides/PCBs analysis. Therefore, the sample containers contained headspace. Due to the headspace, all samples in this SDG were qualified as estimated, "J" or "UJ".

E.2.4 SEMIVOLATILE ORGANIC ANALYSIS BY GC/MS USING EPA METHOD SW8270

E.2.4.1 Introduction

The SVOCs, also called BNAs, are assessed by QC criteria similar to those used for the volatile fraction. The EPA method for SVOCs requires analysis by GC/MS. A total of 171 samples including 128 soil/sediment and 43 aqueous samples were analyzed for 65 target compounds. Laboratory QC data were reviewed for technical holding time, GC/MS instrument performance check, ICAL and CCAL, blanks, surrogate spike compounds, and MS/MSDs.

E.2.4.2 Holding Times

The technical holding times are seven days for aqueous samples and 14 days for soil/sediment samples from the date of sample collection to extraction. Sample extracts must be analyzed 40 days from the date of extraction. Chemical preservation is not required for either soil/sediment or water samples. The technical holding times were met for all samples.

E.2.4.3 GC/MS Instrument Performance Check

Decafluorotriphenylphosphine (DFTPP) is used as the tuning standard for BNA analysis. A performance check is to be performed every 12 hours. In all cases, the DFTPP performance check was performed and met the following criteria indicated here on Table E.10.

TABLE E.10

PERFORMANCE CHECK USING

DECAFLUOROTRIPHENYLPHOSPHINE

m/z	Ion Abundance Criteria
51	30.0 - 60.0% of m/z 198
68	Less than 2.0% of m/z 69
69	Present
70	Less than 2.0% of m/z 69
127	40.0 - 60.0% of m/z 198
197	Less than 1.0% of m/z 198
198	Base peak, 100% relative abundance
199	5.0 - 9.0% of m/z198
275	10.0 - 30.0% of m/z 198
365	Greater than 1.0% of m/z 198
441	Present, but less than m/z 443
442	Greater than 40.0% of m/z 198
443	17.0 - 23.0% of m/z 442

E.2.4.4 Initial Calibration

The ICAL is based on a 5-point standard calibration curve, using standards of 10, 25, 40, 60, and 80 µg/L containing both target compounds, internal standards, and system monitoring compounds. The instrument must demonstrate an RRF of < 0.05 for each compound and a %RSD result <30%. Seventy-eight samples were qualified as "J" or "UJ" due to %RSD values > 30%.

E.2.4.5 Continuing Calibration

A CCAL must be analyzed at the beginning of each 12-hour analysis period after the analysis of the instrument performance check and before to the analysis of any blanks or

samples using a midrange standard. The RRF for each target analyte must be 0.05. The %D between the mean ICAL RRF and the CCAL RRF for each compound must be within ± 25%. Ninety-five samples were qualified because the %D criterion was exceeded. In 15 samples the 3-nitroaniline RRF was < 0.05, requiring an "R" qualification.

E.2.4.6 Blanks

If concentrations of analytes in field samples are less than five times the contaminant concentration in the associated laboratory blanks (10 times for common laboratory contaminants), the results are qualified as "U". Four samples were qualified for contamination by bis(2-ethylhexyl)phthalate and one sample for di-n-butylphthalate contamination (two common laboratory contaminants).

Field QC blanks are analyzed to verify that no contamination occurred during sampling. Field QC blanks analyzed for this fraction are equipment rinseate blanks and field blanks. Data were qualified using the same criteria as laboratory blanks. While some field blanks had detectable analyte concentrations, no results were qualified.

E.2.4.7 Surrogate Spike Compounds

Eight surrogate spike compounds are used to calculate %R for BNA analytes. Qualification is only applied to samples if two surrogates in the same fraction exceed control limits or if a single surrogate has a recovery of less than 10%. Sample re-analysis is to be performed if surrogate %R results are outside of recovery criteria. Surrogate spike recoveries required qualification of the acid fractions as "R" for field samples UANG-FB6-15 (4781-04) and UANG-FB9 (4806-08). The following two Tables (E.11 and E.12) give the BNA Surrogate Compounds with Associated Target Analytes, and Surrogate Recovery Limits.

TABLE E.11

BASE/NEUTRAL/ACID SURROGATE COMPOUNDS WITH ASSOCIATED TARGET ANALYTES

Base/Neutral (B/N) Fraction Surrogates:

Nitrobenzene-d_5 (NBZ)	2-Fluorobiphenyl (FBP)
Terphenyl-d_{14} (TPH)	1,2-Dichlorobenzene-d_4 (DCB)

Base/Neutral (B/N) Fraction Target Compounds:

Dibenzofuran	Indeno(1,2,3-cd)pyrene
2,4-Dinitrotoluene	Dibenz(a,h)anthracene
Diethylphthalate	Benzo(g,h,i)perylene
4-Chlorophenyl-phenylether	bis(2-Chloroethyl)ether
Fluorene	1,3-Dichlorobenzene
4-Nitroaniline	1,4-Dichlorobenzene
N-Nitrosodiphenylamine	1,2-Dichlorobenzene
4-Bromophenyl-phenylether	2,2'-oxybis(1-Chloropropane)
Hexachlorobenzene	N-Nitroso-di-n-propylamine
Phenanthrene	Hexachloroethane
Anthracene	Nitrobenzene
Carbazole	Isophorone
Di-n-butylphthalate	bis(2-Chloroethoxy)methane
Fluoranthene	1,2,4-Trichlorobenzene
Pyrene	Naphthalene
Butylbenzylphthalate	4-Chloroaniline
3,3'-Dichlorobenzidine	Hexachlorocyclopentadiene
Benzo(a)anthracene	2-Chloronaphthalene
Chrysene	2-Nitroaniline
bis(2-Ethylhexyl)phthalate	Dimethylphthalate
Di-n-octylphthalate	Acenaphthylene
Benzo(b)fluoranthene	2,6-Dinitrotoluene
Benzo(k)fluoranthene	3-Nitroaniline
Benzo(a)pyrene	Acenaphthene
Hexachlorobutadiene	2-Methylnaphthalene

TABLE E.11 CONTINUED

BASE/NEUTRAL/ACID SURROGATE COMPOUNDS

WITH ASSOCIATED TARGET ANALYTES (CONTINUED)

Acid (A) Fraction Surrogates:

Phenol-d_5 (PHL)	2-Fluorophenol (2FP)
2-Chlorophenol-d_4 (2CP)	

Acid (A) Fraction Target Compounds:

2,4-Dinitrophenol	4-Methylphenol
4-Nitrophenol	2-Nitrophenol
4,6-Dinitro-2-methylphenol	2,4-Dimethylphenol
Pentachlorophenol	2,4-Dichlorophenol
Phenol	4-Chloro-3-methylphenol
2-Chlorophenol	2,4,6-Trichlorophenol
2-Methylphenol	2,4.5-Trichlorophenol

TABLE E.12

SURROGATE RECOVERY LIMITS

	Water %R	Soil/Sediment %R
NBZ (Nitrobenzene-d5)	35-114	23-120
BP (2-Fluorobiphenyl)	43-116	30-115
TPH (Terphenyl-d14)	33-141	18-137
PHL (Phenol-d5)	10-94	24-113
2FP (2-Fluorophenol)	21-110	25-121
TBP (2,4,6-Tribromophenol)	10-123	19-122
DCB (1,2-Dichlorobenzene-d4)	16-110	20-130 (advisory)
2CP (2-Chlorophenol-d4)	33-110	20-130 (advisory)

E.2.4.8 Matrix Spikes/Matrix Spike Duplicates

A MS or MSD is to be analyzed for every 10 samples (one MS/MSD pair per 20 samples) and should be analyzed for all matrices present in every SDG. Eight soil/sediment samples and two aqueous samples were spiked with the standard MS/MSD solution to meet the frequency criteria. In some cases the MS/MSD did not meet control criteria listed below in Table E.13. However, samples were not qualified because data is not qualified by the MS/MSD results alone.

TABLE E.13

SEMIVOLATILE ORGANIC MS/MSD CRITERIA

	Water		Soil/Sediment	
Compound	%R	RPD	%R	RPD
Phenol	12-110	42	26-90	35
2-Chlorophenol	27-123	40	25-102	50
1,4-Dichlorobenzene	36-97	28	28-104	27
N-Nitroso-Di-n-propylamine	41-116	38	41-126	38
1,2,4-Trichlorobenzene	39-98	28	38-107	23
4-Chloro-3-methylphenol	23-97	42	26-103	33
Acenaphthene	46-118	31	31-137	19
4-Nitrophenol	10-80	50	11-114	50
2-4-Dinitrotoluene	24-96	38	28-89	47
Pentachlorophenol	9-103	50	17-109	47
Pyrene	26-127	31	35-142	36

E.2.4.9 Laboratory Control Spikes/Laboratory Control Spike Duplicates

LCS/LCSDs are performed for every 10 samples analyzed to check the proficiency of the analysis. Control criteria for the LCS/LCSD is the same as for the MS/MSD and is listed above in Table E.13. This data can determine if the MS/MSD is out of control, related to the system, or is a matrix effect. In some cases, the LCS/LCSD results were slightly out of control criteria; samples were not qualified because the LCS/LCSD is not considered alone.

E.2.4.10 Internal Standards

Six internal standard (IS) compounds are used in SVOC analysis; each is associated with a group of analytes. The IS performance criteria ensures that GC/MS sensitivity and responses are stable during each analysis. The IS area counts must not vary more than a factor of two (-50% to +100%) for the associated standard. The relative retention time of the IS must not vary more than +/- 30 seconds from the relative retention time of the associated calibration standard. The laboratory case narrative states that QC criteria were not met; however, the data package did not include the IS summary form. The validators did not consider IS criteria during the validation process.

E.2.4.11 Field Duplicates

Field duplicates are analyzed to determine the representativeness of sampling procedures. Out of each duplicate pair, one is given a coded (false) identifier so that the laboratory results will not be biased. A total of 12 duplicate pairs were analyzed for semivolatiles. Concentrations of 13 analytes were detected in eight of the 12 pairs with none of the individual analyte percent difference comparisons between the primary and the duplicate exceeding QC limits. Samples are not qualified due to duplicate results.

E.2.5 PESTICIDES AND PCB ANALYSIS USING EPA METHOD SW 8080

E.2.5.1 Introduction

This EPA method analyzes PESTs and PCBs using a gas chromatograph (GC) with an electron capture-detector (ECD). A total of 66 field samples, including 25 aqueous and 41 soil/sediment samples, were analyzed for 20 PESTs. Three of the 25 aqueous and 16 of the 41 soil/sediment samples were from the second sampling event at Site 1. Detected PESTs must be confirmed by analyzing the sample extracts on a second GC column. QC assessment for pesticides included evaluation of technical holding times, ICALs, CCALs, blanks, surrogate spike compounds, LCS/LCSDs, and MS/MSDs. Instrument performance checks and pesticide clean-up check QC are not required deliverables for SW846 and were not received.

E.2.5.2 Technical Holding Times

Technical holding times for PESTs/PCB analyses are 7 days from sample collection to extraction for water samples and 14 days from collection to extraction for

soils/sediment samples. The maximum holding time between extraction and analysis is 40 days for both matrices. All samples met holding times.

E.2.5.3 Initial Calibration

Gas chromatograph (GC) calibration is established by injecting individual standard mixtures: A (ISM-A) and B (ISM-B) into the injection port of the GC. These mixtures contain all of the single-component PESTsand surrogates, (using standards of 10, 25, 40, 60, and 80 µg/L) for each GC column used for analysis. The %RSD of the calibration factors for each of the single-component pesticides and surrogates in the initial calibration must be 20% on both columns for ISM-A and ISM-B. For both surrogates the %RSD must be 30%. A single concentration calibration standard must be analyzed for each multi-component target compound. Six samples were qualified as estimated, "J" or "UJ", because the %RSD criterion was not met.

For samples collected during the second sampling event at Site 1, a criterion of greater than or equal to 0.990 was used for the r^2 value of the initial calibration curve. This criterion was met during initial calibration.

E.2.5.4 Continuing Calibration

An instrument blank and a midpoint concentration of the ISM-A and ISM-B are to bracket the front end of a 12-hour period during which samples are analyzed. A second instrument blank and a calibration sample using the mid-level concentration of ISM-A and ISM-B are to be analyzed after each 10 samples or at the end of the 12-hour period. The %D between the calculated amount and the true amount for each of the pesticides and surrogates in the mid-level concentration of the ISM-A and ISM-B should not exceed 15%. The continuing calibration sequence described applies to each individual column. Twenty-seven samples were qualified as "J" or "UJ" due to calibration results not meeting QC limits.

For samples collected during the sampling event at Site 1, a frequency of 10% and a %D limit of +/-15% were used as criteria for continuing calibration. Fourteen pesticide compounds had %Ds above the upper limit of the QC limits; however, since there were no detects, qualification was not required. One pesticide compound had a %R below the lower limit of the QC limits. This resulted in the qualification of eight soil samples as estimated, "J' or "UJ".

E.2.5.5 Blanks

A method blank analysis must be performed for every 10 samples for each matrix type in every SDG. If concentrations of analytes in field samples are less than 5 times the contaminant concentration in the associated laboratory blanks (10 times for common laboratory contaminants), the results are qualified as "U". Contamination was not detected in any of the laboratory blanks for any analytes.

Field QC blanks are analyzed to verify that no contamination occurred during sampling. Field QC blanks analyzed for this fraction are equipment rinseate blanks and field blanks and qualify data using the same criteria as laboratory blanks. No analytes were detected in the blanks.

E.2.5.6 Surrogate Spike Compounds

Three surrogate spikes, tetrachloro-m-xylene (TCX), decachlorobiphenyl (DCB) and dibutylchlorendate are added to all samples (ISMs, Preformance Evaluation Mixture (PEMs), blanks, and MSs) to measure their recovery in sample and blank matrices. The Pace Laboratory advisory limits for %R of the surrogates TCX and DCB are 50-150% for both aqueous and soil/sediment matrices. Five samples were qualified as "J" or "UJ" due to surrogate spike %R being outside of QC limits. DataChem Laboratories advisory limits for %R of the surrogates TCX and DCB are 10-115% for both aqueous and soil matrices. About half of the 16 soil samples from the second sampling event at Site 1 had PESTs and/or PCB surrogate recoveries within 10% (115-126%) above the required QC limit. Since none of the samples demonstrated any target detects, qualification was unnecessary as per EPA guidelines.

E.2.5.7 Laboratory Control Spikes/Laboratory Control Spike Duplicates

The LCS/LCSDs are used in conjunction with information on other deficiencies to evaluate precision and accuracy. One LCS must be prepared and analyzed for each matrix type, for each 10 samples, or for each SDG, whichever is more frequent. All LCS/LCSD samples within the control criteria listed below in Tables (E.14, E.15, and E.16).

TABLE E.14

LCS/LCSD REQUIREMENTS FOR PESTICIDE ANALYSIS

LCS Concentrations in the Sample	Aqueous (µg/L)	Soil/Sediment (µg/kg)
Lindane	0.5	16.67
Heptachlor	0.5	16.67
Aldrin	0.5	16.67
Dieldrin	1.0	33.33
Endrin	1.0	33.33
4,4'-DDT	1.0	33.33

TABLE E.15

Berkeley (Pace) Laboratory LCS/LCSD QC Limits

Compound	%Recovery Water	RPD	%Recovery Soil/Sediment	RPD
Lindane	56-123	15	46-127	50
Heptachlor	40-131	20	35-130	31
Aldrin	40-120	22	34-132	43
Dieldrin	52-126	18	31-134	38
Endrin	56-121	21	42-139	45
4,4'-DDT	38-127	27	23-134	50

TABLE E.16

DataChem Laboratory LCS QC Limits

Compound	%Recovery Water	%Recovery Soil/Sediment
Lindane	32-127	32-127
Heptachlor	34-111	34-111
Aldrin	42-122	42-122
Dieldrin	36-146	36-146
Endrin	30-147	30-147
4,4'-DDT	25-160	25-160

E.2.5.8 Matrix Spikes/Matrix Spike Duplicates

The MS/MSDs are used in conjunction with information on other deficiencies to evaluate precision and accuracy. At least one MS was run for each 10 samples (one MS/MSD pair per 20 samples). A total of three soil/sediment and two aqueous MS/MSDs were analyzed and all met control criteria listed below in Table E.17 and E.18, with the exception of one MSD (4448-01). One soil and one aqueous MS/MSD pair were analyzed with the samples from the second sampling event at Site 1. All MS/MSD recoveries were within the specified QC limits except Endrin which was recovered at 150% and 148%. Samples were not qualified because data is not qualified by the MS/MSD results for this method.

TABLE E.17

PACE LABORATORY

MS/MSD REQUIREMENTS FOR PESTICIDE ANALYSIS

Compound	%Recovery Water	RPD Water	%Recovery Soil	RPD Soil
gamma-BHC (Lindane)	56-123	15	46-127	50
Heptachlor	40-131	20	35-130	31
Aldrin	40-120	22	34-132	43
Dieldrin	52-126	18	31-134	38
Endrin	56-121	21	42-139	45
4,4'-DDT	38-127	27	23-134	50
Endrin	30-147	50	30-147	50
Lindane	32-127	50	32-127	50

TABLE E.18

DATACHEM LABORATORY MS/MSD REQUIREMENTS FOR PESTICIDE ANALYSIS

Compound	%Recovery Water	RPD Water	%Recovery Soil	RPD Soil
4,4'-DDT	25-160	50	25-160	50
Heptachlor	34-111	50	34-111	50
Aldrin	42-122	50	42-122	50
Dieldrin	36-146	50	36-146	50

E.2.5.9 Coded Field Duplicates

Field duplicates are analyzed to determine the representativeness of sampling procedures. One of each duplicate pair is given a coded (false) identifier so that the laboratory will not bias the analytical results. Four field duplicates were analyzed with this fraction and no analytes were detected. Two field duplicates were collected during the second sampling event at Site 1. No analytes were detected in any of the duplicate pairs. Samples are not qualified.

E.2.6 TOTAL RECOVERABLE PETROLEUM HYDROCARBONS USING EPA METHOD 418.1

E.2.6.1 Introduction

The total recoverable petroleum hydrocarbons (TRPH) are analyzed using infrared (IR) spectroscopy. The concentrations are determined by direct comparison with standards. One hundred fifty-one field samples, including 129 soil and 22 aqueous, were analyzed by this method. The QC assessment includes technical holding times, ICALs, CCALs, blanks, MS/MSDs, and LCSs.

E.2.6.2 Technical Holding Time

The technical holding time for TRPH analysis is measured from the time of collection to the time of analysis. Analysis of the samples must occur within 28 days of collection. In no instances were holding times exceeded.

E.2.6.3 Initial Calibration

Instrument performance criteria are established to ensure that correct IR detection limits and wavelengths are set on the spectrophotometer. One calibration must be performed on the instrument every 24 hours or each time the instrument is set up. An ICAL curve is established using a series of five calibration standards of 5, 10, 20, 40, and 80 mg/L. The resulting ICAL curve must have an r value greater than or equal to 0.995. All ICAL results met these requirements.

E.2.6.4 Continuing Calibration Verification

CCAL verification is performed after the ICAL at a frequency of one for every 10 samples. The CCAL %R must fall within the range of 85-115%. CCAL %Rs were within these limits for all samples.

E.2.6.5 Blanks

One laboratory method blank must be analyzed with every 20 samples or at least one per day. Instrument blanks must be analyzed at a frequency of one for every 10 sample analyses after the last CCAL. Target analyte concentrations should not be found in any blank above the project-required detection limit (PRDL). No target analyte was detected in any of the laboratory blanks.

Field QC blanks are analyzed to verify that no contamination occurred during sampling. Equipment rinseate blanks and field blanks were analyzed for this fraction and none was detected.

E.2.6.6 Matrix Spike/Matrix Spike Duplicates

One MS or MSD must be included for every 10 samples (one MS/MSD pair per 20 samples) for each matrix analyzed. The MS %R results should fall in the range 62-114% for aqueous samples and 82-110% for soil samples for this fraction. The MSD RPD results should be below 16% for aqueous samples and below 9% for soil samples. Nine MS/MSD soil samples and two aqueous samples were associated with these samples. Six samples were qualified as estimated J and one sample was qualified as unusable "R" because of the poor performance of the MS/MSD pair identified as UANG-CS5.

E.2.6.7 Laboratory Control Sample

No LCS (or blank spike) samples were analyzed since they are not required by the method. Qualifications of data are not made due to blank spike %R results alone. However, in conjunction with MS/MSD results, blank spikes are used to assess reproducibility and are used to qualify results only when the MS/MSD results are out of control limits. One MS/MSD pair performed poorly, making it difficult to determine if the poor performance was due to matrix effects or if the instrument was out of control limits; since no LCS sample was performed for this method.

E.2.6.8 Field Duplicates

Field duplicates are analyzed to determine the representativeness of sampling procedures. One of each duplicate pair is given a coded (false) identifier so that the laboratory will not bias the analytical results. A total of 11 field duplicates were analyzed, with three pairs having this fraction detected. One comparison for RPD (%) or difference was outside of QC limits. Samples are not qualified due to duplicate results.

E.2.7 TOTAL PETROLEUM HYDROCARBON USING EPA METHOD SW8015M (DIESEL AND GASOLINE)

E.2.7.1 Introduction

Eight soil samples were collected and analyzed for method SW 8015M (diesel and gasoline). The QC assessment includes; technical holding times, ICALs, CCALs, blanks, MS/MSDs, and LCSs and surrogates.

E.2.7.2 Technical Holding Time

The technical holding time for diesel is 14 days from sample collection to extraction and 40 days from sample extraction to analysis. The holding time for gasoline is 14 days from sample collection to analysis. All samples for diesel and gasoline analyses met holding time criteria.

E.2.7.3 Initial Calibration

A five-point ICAL is performed for both diesel and gasoline. The resulting correlation coefficient square of the calibration curve must be >/= 0.990. All initial calibration results were within control limits.

E.2.7.4 Continuing Calibration

A continuing calibration standard is analyzed at the beginning of each 12-hour analysis period, before the analysis of any samples, and once every 10 samples. The %D must be </= +/-15%. All continuing calibration results were in control.

E.2.7.5 Blanks

One laboratory method blank is analyzed for each matrix type; diesel and gasoline samples. If a blank contains detected target compounds, the associated samples containing less than 5 times the blank concentration are qualified as non-detected, "U". All method blanks were found to be free of target analytes.

Blank samples provide a measure of contamination that may have been introduced into a sample set during the field work while samples were being collected, or during transport to the laboratory. Each blank is discussed in more detail in Section E.2.8. There were no field blanks collected for this analysis.

E.2.7.6 Surrogate Spikes

BFB, cumene, and TRIFL were used as surrogates for gasoline. All detects in three samples were qualified as estimated, "J", due to surrogate results. No surrogate was used in the diesel analysis.

E.2.7.7 Matrix Spike/Matrix Spike Duplicates

For every 20 samples, one MS/MSD must be analyzed. The MS/MSD measures the precision and accuracy of the matrix and the potential presence of matrix interference's. The MS/MSD criteria for diesel and gasoline are 50-125% and 39-150%, respectively. All MS/MSD results were within control limits.

E.2.7.8 Laboratory Control Sample

One LCS is required for every 10 samples or for each SDG, whichever was more frequent. The LCS measures the the percent difference between two samples with the same concentrations. The LCS recovery criteria for diesel and gasoline are the same as their respective MS/MSD. All LCS data were within control limits.

E.2.7.9 Field Duplicates

Field duplicates are analyzed to determine the representativeness of sampling procedures. One of each duplicate pair is given a coded (false) identifier so that the laboratory will not bias the analytical results. No field duplicates were analyzed for this method.

E.2.8 DISCUSSION OF FIELD QA PROCEDURES AND RESULTS

E.2.8.1 Introduction

Field QC blanks are analytical samples analyzed in the same manner as site samples. Blank samples provide a measure of contamination that may have been introduced into a sample set during sample collection, transport or while in the laboratory during sample preparation and analysis. As a check of field sampling QA/QC procedures, trip blanks, equipment rinseate blanks, field blanks, and field duplicates were collected and sent to the laboratory at frequencies specified in the SAP (1992b). The purpose of each type of blank, the frequency with which each blank was sampled, and the analytical results are discussed below. A complete list of field QC blank associations are listed in Table E.19.

E.2.8.2 Trip Blanks

Trip blanks are used to indicate potential contamination of volatile organic samples during sample shipping and handling. Trip blanks originate at the laboratory, are transported to the site with the empty sample containers, are handled like samples but are not opened, and are returned to the laboratory for analysis with the sample containers.

One trip blank is sent with every container of VOC samples submitted to the laboratory and is analyzed for VOCs only. Out of 204 samples analyzed for VOCs (by SW8240 and SW8010/SW8020), 53 (including 16 samples from the second sampling event at Site 1) were not accompanied by trip blanks when shipped to the laboratory for analysis. However, this does not appear to affect data integrity; in the cases where trip blanks were sent with samples, all trip blanks, except three, were free of contamination. In most cases, the trip blank accompanied samples in the field during sampling and, for validation purposes, is associated with these samples, as well as the samples with which it was shipped.

Three trip blanks, TB1, TB18, and TB19, contained detectable VOCs as shown in Table E.20. Methylene chloride was detected in TB1 at a concentration of 3.0 µg/l. This compound was not detected in any of the associated samples. Dichloromethane was detected in TB18 at the estimated concentration of 1.6 µg/L, but was not detected in any of the associated samples. 1,1-Dichloroethane was detected at a concentration of 1.0 µg/L in TB19. This compound also was detected in an associated groundwater sample at the same concentration. No other organic compounds were detected in the trip blanks.

E.2.8.3 Equipment Rinseate Blanks

Equipment rinseate blanks (RB) are used to indicate possible contamination due to improperly cleaned sampling equipment. Equipment rinseate blanks consist of analyte-free, (American Standards Testing Material (ASTM) Type II or High Performance Liquid Chromatography (HPLC)-grade water) poured into or through the sampling device following decontamination. The rinseate from the sampling device is collected in a sample container. One RB was collected for every 10 samples assembled per matrix and for each piece of sampling equipment used. The RB samples were analyzed for the same parameters as the associated samples. A total of 18 RBs (including one from the re-sampling event) were analyzed to meet the requirement of one blank for every 10 field samples acquired.

Rinseate blanks that were analyzed for volatile organics contained chloroform, except (RB9-S3), as shown in Table E.21. The concentrations of chloroform range from 11 µg/L to 27 µg/L. Chloroform was detected in an associated groundwater sample from Site 7. It is suspected that the chloroform may have been introduced by the HPLC grade water used for sampling equipment decontamination because the compound was detected in field QC samples from this water source. HPLC-grade water often contains trace quantities of chlorinated organic compounds, particularly chloroform. Carbon Tetrachloride was detected in EQR 13 and EQR 14 at an estimated concentration of 0.9 µg/L. This compound was not detected in associated field samples. Toluene was detected in EQR 14 at an estimated concentration of 0.5 µg/L and was also detected in an associated groundwater sample. Xylenes were detected in RB6-S3 at an estimated total concentration of 0.54 µg/L. 1,3 Dichlorobenzene, was detected in CS-EQR at an estimated concentration of 2.0 µg/L. Diethylphthalate was detected in EQR20 at an estimated concentration of 4.0 µg/L. No other organic compounds were detected in the rinseate blanks. The metals Cd, Cr, Cu, and Zn were also detected in the rinseate samples at the concentrations shown in Table E.21.

TABLE E.19
QA/QC BLANK FIELD ASSOCIATIONS TABLE
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-PI5 (0-2)	S	4483.01	--	10/22/92	--	--	NC	UANG-FB1
UANG-PI5 (6-8)	S	4483.02	--	10/22/92	--	--	NC	UANG-FB1
UANG-PI5 (6-8)	S	4483.02MS	--	10/22/92	--	--	NC	UANG-FB1
UANG-PI5 (6-8)	S	4483.02MSD	--	10/22/92	--	--	NC	UANG-FB1
UANG-S2-SB3 (2.5-4.5)	S	4595.01	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S2-SB3 (4.5-6.5)	S	4595.02	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S2-SB3 (6.5-8.5)	S	4595.03	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S2-SB2 (2.5-4.5)	S	4595.04	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S2-SB2 (4.5-6.5)	S	4595.05	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S2-SB1 (5-7.5)	S	4595.06	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S2-SB1 (0.5-2.5)	S	4595.07	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S7-SB1 (2.5-4.5)	S	4595.08	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-S7-SB1 (7-9)	S	4595.09	--	12/3/92	UANG-RB1	UANG-TB2	NC	UANG-FB1
UANG-TB2	W	4595.1	--	12/3/92	--	--	NC	--
UANG-RB1	W	4601.01	--	12/4/92	N/A	UANG-TB3	NC	UANG-FB1
UANG-TB3	W	4601.02	--	12/4/92	N/A	N/A	NC	N/A
UANG-S7-SB2 (2.5-4.5)	S	4601.03	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S7-SB2 (6.5-9)	S	4601.04	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S7-SB3 (2.5-4.5)	S	4601.05	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S7-SB3 (6.5-9)	S	4601.06	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S7-SB3 (6.5-9)	S	4601.06MS	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S7-SB3 (6.5-9)	S	4601.06MSD	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S7-SB3 (9-11)	S	4601.07	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S4-SB1 (2.5-4.5)	S	4601.08	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-S4-SB1 (6.5-9)	S	4601.09	--	12/4/92	UANG-RB1	UANG-TB3	NC	UANG-FB1
UANG-RB2-S4	W	4608.01	--	12/7/92	--	UANG-TB4	NC	UANG-FB1
UANG-TB4	W	4608.02	--	12/7/92	--	--	NC	--
UANG-S4-SB2 (2.5-4.5)	S	4608.03	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S4-SB2 (6.5-9)	S	4608.04	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S4-SB3 (2.5-4.5)	S	4608.05	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S4-SB3 (6.5-9)	S	4608.06	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1

TABLE E.19 Continued

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-S4-SB4 (2.5-4.5)	S	4608.07	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S4-SB4 (6.5-9)	S	4608.08	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S4-SB4 (9-11)	S	4608.09	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S5-SB1 (0-2)	S	4608.1	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S5-SB1 (6-8)	S	4608.11	--	12/7/92	UANG-RB2-S4	UANG-TB4	NC	UANG-FB1
UANG-S5-SB2 (6-8.5)	S	4624.01	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB3 (6-8.5)	S	4624.02	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB3 (8.5-11)	S	4624.03	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB4 (6-8.5)	S	4624.04	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB4 (6-8.5)	S	4624.04MS	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB4 (6-8.5)	S	4624.04MSD	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S6-SB1 (7-9)	S	4624.05	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB4 (2-4)	S	4624.06	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S6-SB1 (2.5-4.5)	S	4624.07	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB3 (0-2)	S	4624.08	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-S5-SB2 (2-4)	S	4624.09	--	12/8/92	UANG-RB3-S5	UANG-TB5	NC	UANG-FB1
UANG-RB3-S5	W	4624.1	--	12/8/92	--	UANG-TB5	NC	UANG-FB1
UANG-TB5	W	4624.11	--	12/8/92	--	--	NC	--
UANG-S6-SB3 (6.5-9)	S	4627.01	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-S6-SB4 (6-8.5)	S	4627.02	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-S6-SB4 (8.5-11)	S	4627.03	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-S6-SB2 (6-8.5)	S	4627.04	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-S6-SB4 (0-2)	S	4627.05	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-S6-SB3 (0.5-2.5)	S	4627.06	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-S6-SB2 (2-4)	S	4627.07	--	12/9/92	UANG-RB4-S6	UANG-TB6	NC	UANG-FB1
UANG-RB4-S6	W	4627.08	--	12/9/92	--	UANG-TB6	NC	UANG-FB1
UANG-TB6	W	4627.09	--	12/9/92	--	--	NC	--
UANG-RB5-S6	W	4633.01	EL5746	12/10/92	--	UANG-TB7/TB8	NC	UANG-FB1
UANG-TB8	W	4633.02	EL5747	12/10/92	--	N/A	NC	--
UANG-TB7	W	4633.03	EL5748	12/10/92	--	N/A	NC	--
UANG-S6-SB5 (6-8.5)	S	4633.04	EL5749	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB8 (6.5-9)	S	4633.05	EL5750	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB7 (6-8.5)	S	4633.06	EL5751	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB6 (8.5-11)	S	4633.07	EL5752	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB6 (6-8.5)	S	4633.08	EL5753	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S3-SS1	S	4633.09	EL5754	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S3-SS2	S	4633.1	EL5755	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB6 (2-4)	S	4633.11	EL5756	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB7 (2-4)	S	4633.12	EL5757	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1

TABLE E.19 Continued

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-S6-SB8 (2.5-4.5)	S	4633.13	EL5758	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB5 (0-2)	S	4633.14	EL5759	12/10/92	UANG-RB5-S6	UANG-TB7	NC	UANG-FB1
UANG-S6-SB9 (0-2)	S	4642.01	EL5760	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S6-SB9 (6-8.5)	S	4642.02	EL5761	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S6-SB10 (0-2)	S	4642.03	EL5762	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S6-SB10 (6-8.5)	S	4642.04	EL5763	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S6-SB10 (6-8.5)	S	4642.04MS	EL5763	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S6-SB10 (6-8.5)	S	4642.04MSD	EL5763	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S6-SB9 (8.5-11)	S	4642.05	EL5764	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S3-SS4 (NORTH)	S	4642.06	EL5765	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S3-SS5 (SOUTH)	S	4642.07	EL5766	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S3-SS6 (WEST)	S	4642.08	EL5767	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S3-SS3 (SMP.3)	S	4642.09	EL5768	12/11/92	UANG-RB7-S6	B	NC	UANG-FB1
UANG-S1-SB2 (0-2)	S	4642.1	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-S1-SB2 (4-6.5)	S	4642.11	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-SB2 (4-6.5)	S	4642.11MS	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-SB2 (4-6.5)	S	4642.11MSD	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-S1-SB1 (0-2)	S	4642.12	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-S1-SB1 (4-6.5)	S	4642.13	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-S1-SB3 (2-4)	S	4642.14	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-S1-SB3 (4-6.5)	S	4642.15	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-S1-SB3 (6.5-8.5)	S	4642.16	--	12/11/92	UANG-RB6-S1	B	NC	UANG-FB1
UANG-FB1	W	4642.17	EL5769	12/11/92	N/A	B	NC	N/A
UANG-RB6-S1	W	4642.18	--	12/11/92	N/A	B	NC	UANG-FB1
UANG-RB7-S6	W	4642.19	EL5770	12/11/92	N/A	B	NC	UANG-FB1
UANG-RB8-S7	W	4654.01	EL5771	12/14/92	N/A	UANG-TB9	NC	UANG-FB1
UANG-S7-SB4 (4.5-6.5)	S	4654.02	EL5772	12/14/92	UANG-RB8-S7	UANG-TB9	NC	UANG-FB1
UANG-S7-SB5 (4.5-6.5)	S	4654.03	EL5773	12/14/92	UANG-RB8-S7	UANG-TB9	NC	UANG-FB1
UANG-S7-SB5 (6.5-9)	S	4654.04	EL5774	12/14/92	UANG-RB8-S7	UANG-TB9	NC	UANG-FB1
UANG-S7-SB6 (4-6)	S	4654.05	EL5775	12/14/92	UANG-RB8-S7	UANG-TB9	NC	UANG-FB1
UANG-S4-SB5 (5-7)	S	4662.01	EL5776	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-S4-SB5 (7-9)	S	4662.02	EL5777	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-S4-SB7 (4.5-6.5)	S	4662.03	EL5778	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-S4-SB7 (4.5-6.5)	S	4662.03MS	EL5778	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-S4-SB7 (4.5-6.5)	S	4662.03MSD	EL5778	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-S4-SB6 (2.5-4.5)	S	4662.04	EL5779	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-S4-SB6 (6.5-8.5)	S	4662.05	EL5780	12/15/92	UANG-RB8-S7	ANG-TB9/TB1	NC	UANG-FB1
UANG-TB10	W	4662.06	EL5781	12/15/92	N/A	N/A	NC	N/A
UANG-TB9	W	4662.07	EL5782	12/15/92	N/A	N/A	NC	N/A
UANG-RB9-S3	W	4683.01	--	12/18/92	N/A	N/A	NC	UANG-FB1

TABLE E.19 Continued

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-TB11	W	4683.02	--	12/17/92	N/A	N/A	NC	N/A
UANG-TB12	W	4683.03	--	12/17/92	N/A	N/A	NC	N/A
UANG-S7-SB8 (4.5-6.5)	S	4683.04	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB2 (4.5-6.5)	S	4683.05	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB2 (4.5-6.5)	S	4683.05MS	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB2 (4.5-6.5)	S	4683.05MSD	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB3 (4-6)	S	4683.06	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB3 (6-8)	S	4683.07	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB1 (4-6)	S	4683.08	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S3-SB1 (6-8)	S	4683.09	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S2-SB4 (4.5-6.5)	S	4683.1	--	12/17/92	UANG-RB9-S3	UANG-TB12	NC	UANG-FB1
UANG-S5-SB6 (4-6)	S	4683.11	--	12/17/92	UANG-RB9-S3	UANG-TB11	NC	UANG-FB1
UANG-S5-SB5 (6-8.5)	S	4683.12	--	12/17/92	UANG-RB9-S3	UANG-TB11	NC	UANG-FB1
UANG-S5-SB7 (6-8)	S	4683.13	--	12/17/92	UANG-RB9-S3	UANG-TB11	NC	UANG-FB1
UANG-S7-SB7 (6-8)	S	4683.14	--	12/17/92	UANG-RB9-S3	UANG-TB11	NC	UANG-FB1
UANG-S3-SB4 (6-8)	S	4683.15	--	12/17/92	UANG-RB9-S3	--	NC	UANG-FB1
UANG-S4-SB8 (0.5-2.5)	S	4705.01	--	12/29/92	N/A	UANG-TB14	NC	UANG-FB1
UANG-S4-SB8 (4.5-6.5)	S	4705.02	--	12/29/92	N/A	UANG-TB14	NC	UANG-FB1
UANG-S4-SB9 (2.5-4.5)	S	4705.03	--	12/29/92	N/A	UANG-TB14	NC	UANG-FB1
UANG-S4-SB9 (4.5-6.5)	S	4705.04	--	12/29/92	N/A	UANG-TB14	NC	UANG-FB1
UANG-S7-SB9 (2.5-4.5)	S	4705.05	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S7-SB9 (8.5-9.5)	S	4705.06	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S7-SB9 (4.5-6.5)	S	4705.07	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S7-SB9 (4.5-6.5)	S	4705.07MS	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S7-SB9 (4.5-6.5)	S	4705.07MSD	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S7-SB10 (4.5-6.5)	S	4705.08	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S2-SB5 (6.5-8.5)	S	4705.09	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S2-SB6 (6.5-8.5)	S	4705.1	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-S3-SB5 (4-6)	S	4705-11	--	12/30/92	N/A	UANG-TB15	NC	UANG-FB1
UANG-TB14	W	4705.12	--	12/29/92	N/A	--	NC	--
UANG-TB15	W	4705.13	--	12/30/92	N/A	--	NC	--
UANG-BG-MW1 (0-2)	S	4737.01	--	1/13/93	N/A	UANG-TB2 (16)	N/A	UANG-FB1
UANG-BG-MW1 (4-6)	S	4737.02	--	1/13/93	N/A	UANG-TB2 (16)	N/A	UANG-FB1
UANG-TB2 (16)	W	4737.03	--	1/13/93	N/A	N/A	N/A	N/A
UANG-BG-MW1-1	W	--	CLPO72	1/29/93	UANG-BG-RB1	UANG-TB-BG1	UANG-FB2	UANG-FB6-15
UANG-BG-MW1-1	W	--	072MS	1/29/93	UANG-BG-RB1	UANG-TB-BG1	UANG-FB2	UANG-FB6-15
UANG-BG-MW1-1	W	--	072MSD	1/29/93	UANG-BG-RB1	UANG-TB-BG1	UANG-FB2	UANG-FB6-15
UANG-BG-RB1	W	--	CLP073	1/29/93	N/A	UANG-TB-BG1	UANG-FB2	UANG-FB6-15
UANG-TB-BG-1	W	--	CLP074	1/29/93	N/A	N/A	N/A	N/A
UANG-FB4	W	4779.01	--	1/29/93	N/A	N/A	UANG-FB2	N/A

TABLE E.19 Continued

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-S1-MW1-3	W	4779.02	--	2/1/93	UANG-RB5-S1	UANG-TB17	UANG-FB2	UANG-FB6-15
UANG-RB5-S1	W	4779.03	--	2/1/93	N/A	N/A	UANG-FB2	UANG-FB6-15
UANG-S1-MW2-2	W	4779.04	--	2/1/93	UANG-RB5-S1	UANG-TB17	UANG-FB2	UANG-FB6-15
UANG-FB2	W	4779.05	--	2/1/93	N/A	N/A	--	UANG-FB6-15
UANG-FB5-8	W	4779.06	--	2/2/93	N/A	N/A	UANG-FB5-8	UANG-FB6-15
UANG-RB6-S3	W	4779.07	--	2/2/93	N/A	N/A	UANG-FB5-8	UANG-FB6-15
UANG-S2-MW1-4	W	4779.08	--	2/2/93	UANG-RB6-S3	UANG-TB17	UANG-FB5-8	UANG-FB6-15
UANG-S3-MW3-5	W	4779.09	--	2/2/93	UANG-RB6-S3	UANG-TB17	UANG-FB5-8	UANG-FB6-15
UANG-S3-MW1-6	W	4779.1	--	2/2/93	UANG-RB6-S3	UANG-TB17	UANG-FB5-8	UANG-FB6-15
UANG-S3-MW2-7	W	4779.11	--	2/2/93	UANG-RB6-S3	UANG-TB17	UANG-FB5-8	UANG-FB6-15
UANG-TB17	W	4779.12	--	2/2/93	N/A	N/A	N/A	N/A
UANG-S7-MW1-11	W	4781.01	--	2/3/93	UANG-EQR13	UANG-TB18	UANG-FB4	UANG-FB6-15
UANG-EQR13	W	4781.02	--	2/3/93	N/A	UANG-TB18	UANG-FB4	UANG-FB6-15
UANG-S4-MW1-9	W	4781.03	--	2/3/93	UANG-EQR13	UANG-TB18	UANG-FB4	UANG-FB6-15
UANG-FB6-15	W	4781.04	--	2/3/93	N/A	N/A	UANG-FB4	UANG-FB6-15
UANG-EQR14	W	4781.05	--	2/3/93	N/A	UANG-TB18	UANG-FB4	UANG-FB6-15
UANG-S7-MW2-12	W	4781.06	--	2/3/93	UANG-EQR14	UANG-TB18	UANG-FB4	UANG-FB6-15
UANG-TB18	W	4781.07	--	2/3/93	N/A	N/A	N/A	N/A
UANG-FB7-19	W	4788.01	--	2/4/93	N/A	UANG-TB19	UANG-FB4	UANG-FB6-15
UANG-EQR20	W	4788.02	--	2/4/93	N/A	UANG-TB19	UANG-FB7-19	UANG-FB6-15
UANG-S6-MW3-18	W	4788.03	--	2/4/93	UANG-EQR20	UANG-TB19	UANG-FB7-19	UANG-FB6-15
UANG-S6-MW1-16	W	4788.04	--	2/4/93	UANG-EQR20	UANG-TB19	UANG-FB7-19	UANG-FB6-15
UANG-S5-MW1-10	W	4788.05	--	2/4/93	UANG-EQR20	UANG-TB19	UANG-FB7-19	UANG-FB6-15
UANG-S6-MW2-17	W	4788.06	--	2/4/93	UANG-EQR20	UANG-TB19	UANG-FB7-19	UANG-FB6-15
UANG-TB19	W	4788.07	--	2/4/93	N/A	--	--	--
UANG-S5-SB6 (1-3)	S	4797.01	--	2/8/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S5-SB6 (5-7)	S	4797.02	--	2/8/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S7-SB7 (1-3)	S	4797.03	--	2/8/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S7-SB7 (5-7)	S	4797.04	--	2/8/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S5-SB7 (1-3)	S	4797.05	--	2/9/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S5-SB7 (5-7)	S	4797.06	--	2/9/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S5-SB5 (1-3)	S	4797.07	--	2/9/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-S5-SB5 (5-7)	S	4797.08	--	2/9/93	N/A	UANG-TB20	UANG-FB8	UANG-FB9
UANG-TB20	W	4797-09	--	2/9/93	N/A	N/A	N/A	N/A
UANG-S2-MW1	W	4801.01	--	2/10/93	UANG-CW3-EQR	UANG-TB21	UANG-FB8	UANG-FB9
UANG-S2-MW1	W	4801.01MS	--	2/10/93	UANG-CW3-EQR	UANG-TB21	UANG-FB8	UANG-FB9
UANG-S2-MW1	W	4801.01MSD	--	2/10/93	UANG-CW3-EQR	UANG-TB21	UANG-FB8	UANG-FB9
UANG-TB21	W	4801.02	--	2/10/93	UANG-CW3-EQR	UANG-TB21	N/A	N/A
UANG-CW1	W	4804.01	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW2	W	4804.02	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9

TABLE E.19 Continued

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-CW3	W	4804.03	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW3	W	4804.03MS	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW1	W	4804.01	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW2	W	4804.02	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW3	W	4804.03	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW3	W	4804.03MS	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW3	W	4804.03MSD	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW3-EQR	W	4804-05	--	2/11/93	N/A	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-CW4	W	4804.06	--	2/11/93	UANG-CW3-EQR	UANG-TB22	ANG-CS-FB1	UANG-FB9
UANG-FB8	W	4804.08	--	2/11/93	N/A	UANG-TB22	N/A	N/A
UANG-TB22	W	4804.09	--	2/11/93	N/A	N/A	N/A	N/A
UANG-CS1	S	4806.01	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS2	S	4806.02	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS3	S	4806.03	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS4	S	4806.04	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS5	S	4806.05	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS5	S	4806.05MS	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS5	S	4806.05MSD	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS6	S	4806.06	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-CS7	S	4806.07	--	2/12/93	UANG-CS-EQR	N/A	ANG-CS-FB1	UANG-FB9
UANG-FB9	W	4806.08	--	2/12/93	N/A	N/A	N/A	N/A
UANG-CS-EQR	W	4806.09	--	2/12/93	N/A	N/A	N/A	N/A
UANG-CS-FB10	W	4806.1	--	2/12/93	N/A	N/A	N/A	N/A
UANG-S10-SB1 (2-4)	S	--	1324	5/25/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB1 (6-8)	S	--	1325	5/25/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB1 (8-10)	S	--	1311	5/25/94	N/A	N/A	N/A	N/A
UANG-S10-SB1 (8-MS)	S	--	1311MS	5/25/94	N/A	N/A	N/A	N/A
UANG-S10-SB1 (8MSD)	S	--	1311MS	5/25/94	N/A	N/A	N/A	N/A
UANG-S10-SB2 (2-4)	S	--	1318	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB2 (4-6)	S	--	1319	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB3 (1-3)	S	--	1320	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB3 (3-5)	S	--	1321	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB3 (3-MS)	S	--	1321MS	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB3 (3MSD)	S	--	1321MS	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB4 (2-4)	S	--	1322	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-SB4 (4-6)	S	--	1323	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S10-TB1	W	--	1326	5/26/94	N/A	UANG-S10-TB1	N/A	N/A
UANG-S1-SB4 (7.5-9.5)	S	--	2981	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB4 (3.5-5.5)	S	--	2982	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB5 (1-3)	S	--	2983	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3

TABLE E.19 Continued

ES Field I.D.	Matrix	ES Lab. I.D.	atache Lab. I.D.	Sample Date	Equipment Rinseate Blank	Trip Blank	HPLC Water Field Blank	Potable Water Field Blank
UANG-S1-SB5 (3-5)	S	--	2984	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB6 (1-3)	S	--	2985	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB6 (3-5)	S	--	2986	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB6 (5-7)	S	--	2987	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB7 (1-3)	S	--	2988	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB7 (5-7)	S	--	2989	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB8 (1-3)	S	--	2990	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB8 (1MS)	S	--	2990MS	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB8 (1MSD)	S	--	2990MS	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB8 (7-9)	S	--	2991	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB8 (5-7)	S	--	2992	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB9 (3-5)	S	--	2993	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB9 (5-7)	S	--	2994	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB10 (1-3)	S	--	2995	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-SB10 (3-5)	S	--	2996	10/26/94	UANG-S1-RB3	N/A	UANG-S1-FB4	UANG-S1-FB3
UANG-S1-129-2	S	--	4422	12/9/94	N/A	N/A	N/A	N/A
UANG-S1-129-2MS	S	--	4422MS	12/9/94	N/A	N/A	N/A	N/A
UANG-S1-129-2MSD	S	--	4422MS	12/9/94	N/A	N/A	N/A	N/A
UANG-S10-129-1	S	--	4423	12/9/94	N/A	N/A	N/A	N/A

B - Broken
W - Water
S - Soil
N/A - Not applicable
NC - Not collected

TABLE E.20
TRIP BLANKS
ANALYTES DETECTED
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method) (units)	TB2*	TB3*	TB4*	TB5*	TB6*	TB7***	TB8***	TB9***	TB10***
Volatile Organics (SW8240, 8010/8020) (µg/L)									
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1,1-Dichloroethane	5U	5U	5U	5U	5U	1U	1U	1U	1U
Dichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA

Parameter (method) (units)	TB-BG-1***	TB11**	TB12**	TB14**	TB15**	TB-2(16)***	TB17**	TB18**	TB19**
Volatile Organics (SW8240, 8010/8020) (µg/L)									
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1,1-Dichloroethane	1U	1U	1U	1U	1U	1U	1U	1U	**1.0**
Dichloromethane	NA	5U	5U	5U	5U	5U	5U	**1.6J**	5U

Parameter (method) (units)	TB20**	TB21**	TB22**	TB1-POL***
Volatile Organics (SW8240, 8010/8020) (µg/L)				
Dilution Factor	1.0	1.0	1.0	1.0
1,1-Dichloroethane	1U	1U	1U	1U
Dichloromethane	5U	5U	5U	**3J**

U Compound not present above its detection limit, which precedes the flag.
J Concentration of the compound is estimated.
***** Method 8240 used for analysis of VOC samples by ES-Berkley Laboratory.
****** Method 8010/8020 was used for analysis of VOC samples by ES-Berkley Laboratory.
******* Method 8010/8020 was used for analysis of VOC samples by Datachem Laboratories.

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TABLE E.21
SPLIT-SPOON SAMPLER, BAILER, AND AUGER RINSEATE BLANKS
ANALYTES DETECTED
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method) (units)	RB1*	RB2-S4*	RB3-S5*	RB4-S6*	RB5-S6***	RB6-S1	RB7-S6***	RB8-S7***	RB9-S3**
Volatile Organics (SW8240, 8010/8020) (µg/L)									
Dilution Factor	1.0	1.0	1.0	1.0	1.0	--	1.0	1.0	1.0
Carbon Tetrachloride	5U	5U	5U	5U	1U	--	1U	1U	1U
Chloroform	**19**	**22**	**21**	**27**	**21**	--	**11**	**21**	1U
Toluene	5U	5U	5U	5U	1U	--	1U	1U	2U
Xylenes	5U	5U	5U	5U	1U	--	1U	1U	2U
Semivolatile Organics (SW8270) (µg/L)									
Dilution Factor	1.0	1.0	1.0	1.0	1.0	--	1.0	1.0	1.0
1,3 Dichlorobenzene	10U	10U	10U	10U	10U	--	10U	10U	10U
Diethylphthalate	10U	10U	10U	10U	10U	--	10U	10U	10U
Total Petroleum Hydrocarbons (E418.1) (mg/L)									
Results	1U	1U	1U	1U	1U	--	1U	1U	1U
Pesticides/PCBs (SW 8080) (µg/L)									
Dilution Factor	--	--	--	--	--	1.0	--	--	--

All Pesticides/PCBs were below their detection limits.

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TABLE E.21 Continued

Parameter (method) (units)	BG-RB1**	RB5-S1	RB6-S3**	EQR13**	EQR14**	EQR20**	CW3-EQR**	CS-EQR**
Volatile Organics (SW8240, 8010/8020) (µg/L)								
Dilution Factor	1.0	--	1.0	1.0	1.0	1.0	1.0	1.0
Carbon Tetrachloride	1U	--	1U	**0.9J**	**0.9J**	1U	1U	1U
Chloroform	**20**	--	**19**	**20**	**19J**	**21**	**25**	**13**
Toluene	1U	--	2U	2U	**0.5J**	2U	2U	2U
Xylenes	1U	--	**0.54J**	2U	2U	2U	2U	2U
Semivolatile Organics (SW8270) (µg/L)								
Dilution Factor	--	--	1.0	1.0	1.0	1.0	1.0	1.0
1,3 Dichlorobenzene	--	--	10U	10U	10U	10U	10U	**2J**
Diethylphthalate	--	--	10U	10U	10U	**4J**	10U	10U
Total Petroleum Hydrocarbons (E418.1) (mg/L)								
Results	--	--	--	--	--	--	1U	1U
Pesticides/PCBs (SW8080) (µg/L)								
Dilution Factor	--	1.0	--	--	--	--	1.0	1.0

All Pesticides/PCBs were below their detection limits.

TABLE E.21 Continued

Parameter	(method)	(units)	RB1	RB2-S4	RB3-S5	RB4-S6	RB5-S6	RB6-S1	RB7-S6	RB8-S7	RB9-S3
Priority-Pollutant Metals (µg/L)											
Cadmium			2U	2.2UJ	--	--	--	--	--	2.6UJ	--
Chromium			2U	2U	--	--	--	--	--	**2.6J**	--
Copper			5U	5U	--	--	--	--	--	5U	--
Zinc			**5.2J**	5U	--	--	--	--	--	5U	--

Parameter	(method)	(units)	BG-RB1	RB5-S1	RB6-S3	EQR13	EQR14	EQR20	CW3-EQR	CS-EQR	
Priority-Pollutant Metals (µg/L)											
Cadmium			--	--	--	1U	1U	--	**1.3J**	1U	--
Chromium			--	--	--	2.9UJ	3.2UJ	--	2U	2U	--
Copper			--	--	--	3.0B	4.3UJ	--	2.4UJ	**3.3J**	--
Zinc			--	--	--	5.4UJ	5.4UJ	--	7.7UJ	7.1UJ	--

U Compound not present above its detection limit, which precedes the flag.
UJ Compound not detected, but the detection limit is estimated.
J Concentration of the compound is estimated.
-- Not Analyzed.
***** Method 8240 used for analysis of VOC samples by ES-Berkley Laboratory.
****** Method 8010/8020 was used for analysis of VOC samples by ES-Berkley Laboratory.
******* Method 8010/8020 was used for analysis of VOC samples by Datachem Laboratories.

E.2.8.4 Field Blanks

Field blanks are samples of potable source water (used for decontamination and steam cleaning) and samples of analyte-free deionized water(used for decontamination). A field blank is defined as water that is poured into a sample container at the site, is handled like a sample, and is transported to the laboratory for analysis. A minimum of one sample of each water source for a given sampling event is collected. Normally two field blanks are sampled per sampling event: a sample of the potable water used for steam cleaning and a sample of the deionized water used for decontamination. These samples determine if contamination occurred during the decontamination process, or also, in the case of the deionized water, if contamination was introduced in the field environment during sampling. Additional field blanks are also analyzed for each lot or water source. The potable water source was Vern and Carol's Diner (the Base Diner) in all cases. The final rinse was an HPLC-grade deionized water. A total of 11 (including two from the re-sampling event) field blanks were sampled and analyzed.

The potable water field blanks FB1, FB6-15, and FB9 contained chloroform, bromodichloromethane (except FB9), and dibromochloromethane at concentrations shown in Table E.22. These compounds are often present in chlorinated water supplies. Chloroform was also detected in the HPLC-water blanks at similar concentrations shown in the table, indicating that chloroform may have been introduced by the hydrochloric acid preservative. Ethylbenzene and chlorobenzene were reported at estimated concentrations of 0.4 µg/L and 0.8 µg/L, respectively, in FB5-8. In FB8 and FB9, 1,3-dichlorobenzene was reported at estimated concentrations of 3.0 µg/L and 2.0 µg/L, respectively.

Two field blanks contained metals as shown in Table E.22. Cu and Zn were detected in FB1 and FB6-15.

E.2.8.5 Coded Field Duplicates

Field duplicates are defined as two or more samples collected at a sampling location during a single act of sampling and are coded with a false identifier indistinguishable from other samples. Field duplicates are examined for precision by calculating the RPD when measured sample values are greater than five times the CRDL or else by calculating the difference. Control limits of ± 40% for water and ± 70% for soil/sediment are used for evaluating the RPD values. Control limits of ± 2 times the contract required quantitation limit (CRQL) for water and ± 4 times the CRQL for soil are used for evaluating the difference. Field duplicate results are listed by fraction in Table E.23.

TABLE E.22
FIELD BLANKS
ANALYTES DETECTED
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method) (units)	FB18*	FB2	FB4	FB5-8**	FB6-15**	FB7-19**	FB8**	FB9**	CS-FB10**	FB3*	FB4*
Volatile Organics (SW8240, 8010/8020) (µg/L)											
Dilution Factor	1.0	--	--	1.0	1.0	1.0	1.0	1.0	1.0	--	--
Chloroform	**27**	--	--	**20**	**11**	**21**	**20**	**11**	**15**	--	--
Bromodichloromethane	**11**	--	--	1U	**4.5**	1U	1U	1U	1U	--	--
Dibromochloromethane	**3.7**	--	--	1U	**2.1**	1U	1U	**1.9**	1U	--	--
Ethylbenzene	1U	--	--	**0.4J**	2U	2U	2U	2U	2U	--	--
Chlorobenzene	1U	--	--	**0.8J**	2U	2U	2U	2U	2U	--	--
Semivolatile Organics (SW8270) (µg/L)											
Dilution Factor	1.0	--	1.0	1.0	1.0	1.0	1.0	1.0	1.0	--	--
1,3 Dichlorobenzene	10U	--	10U	10U	10U	10U	**3J**	**2J**	10U	--	--
Total Petroleum Hydrocarbons (E418.1) (mg/L)											
Results	1U	--	--	--	--	--	1U	1U	1U	--	--
Pesticides/PCBs (SW 8080) (µg/L)											
Dilution Factor	--	1.0	1.0	1.0	--	1.0	1.0	--	--	1.0	1.0

All Pesticides/PCBs were below their detection limits.

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TABLE E.22 Continued
FIELD BLANKS
ANALYTES DETECTED
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter	(method)	(units)	FB1	FB2	FB4	FB5-8	FB6-15	FB7-19	FB8	FB9	CS-FB10	FB3	FB4
Priority-Pollutant Metals (µg/L)													
Cadmium			1U	--	--	1U	1U	1.2UJ	1U	1U	1U	--	--
Chromium			2U	--	--	3.4UJ	3.6UJ	2.6UJ	2U	2.8UJ	2U	--	--
Copper			**5.0J**	--	--	4.0UJ	**26.2**	3.3UJ	2.4UJ	6.5UJ	2.4UJ	--	--
Zinc			**10.2J**	--	--	4.8UJ	**16.8J**	2.3UJ	5.8UJ	13.7UJ	4.4UJ	--	--

U Compound not present above its detection limit, which precedes the flag.
J Concentration of the compound is estimated.
UJ Compound not detected, but the detection limit is estimated.
-- Not Analyzed.
* Method 8010/8020 was used for analysis of VOC samples by Datachem Laboratories.
** Method 8010/8020 was used for analysis of VOC samples by ES-Berkley Laboratory.

TABLE E.23
FIELD DUPLICATES
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH
(Results by Fraction)

Fraction: Priority Pollutant Metals

UANG City Drain CS6 and UANG City Drain CS7

Analyte	CRQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
Antimony	12	ND	1.9		1.90	NO
Arsenic	2	29.80	20.00	39		NO
Beryllium	1	0.40	0.39		0.01	NO
Cadmium	1	3.30	3.70		0.40	NO
Chromium	2	52.20	52.60	1		NO
Copper	5	66.60	115.00	53		NO
Lead	0.6	568.00	322.00	55		NO
Mercury	0.1	0.42	0.36		0.06	NO
Nickel	8	16.80	11.90		4.90	NO
Selenium	1	4.80	0.39		4.41	YES
Zinc	4	283.00	383.00	30		NO

UANG City Drain CW3 and UANG City Drain CW4

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Antimony	60	13.8	19		5.20	NO
Arsenic	10	63.00	86.50	31		YES
Cadmium	5	ND	1.00		1.00	NO
Copper	25	ND	12.60		12.60	NO
Selenium	5	1.90	7.40		5.50	NO

UANG-S2-SB3 (4.5-6.5) and UANG-S2-SB3 (6.5-8.5)

Analyte	CRQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
Arsenic	2	9.00	4.50		4.50	NO
Beryllium	1	0.77	0.27		0.50	NO
Chromium	2	22.80	5.20		17.60	YES
Copper	5	35.10	11.30		23.80	YES
Lead	0.6	25.80	15.00	53	10.80	NO
Nickel	8	15.20	5.40		9.80	NO
Thallium	2	0.71	ND		0.71	NO
Zinc	4	78.10	29.50	90		YES

TABLE E.23 (Continued)

UANG-S4-SB4 (6.5-9) and UANG-S4-SB4 (9-11)

Analyte	CRQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
Arsenic	2	17.10	11.40	40		NO
Beryllium	1	0.46	0.43		0.03	NO
Chromium	2	13.10	11.70	11		NO
Copper	5	26.40	41.20	44		NO
Lead	0.6	18.80	18.20	3		NO
Nickel	8	10.50	9.40		1.10	NO
Zinc	4	53.50	53.80	1		NO

UANG-S4-SB5 (5-7) and UANG-S4-SB5 (7-9)

Analyte	CRQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
Antimony	12	ND	2.60	--	2.60	NO
Arsenic	2	4.70	4.70	0	0.00	NO
Beryllium	1	0.38	0.36	5	0.02	NO
Chromium	2	7.70	6.30	20	1.40	NO
Copper	5	29.40	35.80	20		NO
Lead	0.6	15.90	14.00	13		NO
Nickel	8	8.10	7.40	9	0.70	NO
Zinc	4	42.20	41.10	3		NO

UANG-S7-SB9 (2.5-4.5) and UANG-S7-SB9 (8.5-9.5)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Arsenic	2	11.70	10.20	13.6		NO
Beryllium	1	0.53	0.39		0.14	NO
Cadmium	1	0.33	0.30		0.03	NO
Chromium	2	20.00	11.00	58.1		NO
Copper	5	25.50	19.10		6.40	NO
Lead	0.6	7.00	6.00	15.3		NO
Nickel	8	13.70	7.90		5.80	NO
Zinc	4	58.70	41.00	35.5		NO

Fraction: Volatile Organics

UANG-S2-SB3 (4.5-6.5) and UANG-S2-SB3 (6.5-8.5)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Benzene	10	6	3		3	NO
Toluene	10	5	3		2	NO
Ethylbenzene	10	100	48		52	YES
Total Xylenes	10	43	16		27	NO

TABLE E.23 (Continued)

UANG-S4-SB4 (6.5-9) and UANG-S4-SB4 (9-11)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Toluene	10	3	5		2	NO
2-Butanone	10	3	ND		3	NO
Toluene	10	3	5		2	NO
Methylene Chloride	5	ND	2		2	NO
Carbon Disulfide	5	ND	2		2	NO

UANG-S5-SB3 (6-8.5) and UANG-S5-SB3 (8.5-11)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Acetone	10	5	5		0	NO
Toluene	10	3	4		1	NO

UANG-S6-SB4 (6-8.5) and UANG-S6-SB4 (8.5-11) (No analytes detected)

Fraction: Aromatic Compounds

UANG City Drain CS6 and UANG City Drain CS7

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Toluene	10	430	ND		430	YES
Xylenes (total)	10	710	ND		710	YES

UANG City Drain CW3 and UANG City Drain CW4

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Benzene	10	1.10	ND		1.10	NO
Toluene	10	3.50	2.40		1.10	NO
Xylenes (total)	10	5.10	ND		5.10	NO

UANG-S3-MW1 and UANG-S3-MW3

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Toluene	10	0.27	0.24		0.03	NO
Chlorobenzene	10	33.00	32.00		1.00	NO
1,2-Dichlorobenzene	10	5.70	5.40		0.30	NO
1,3-Dichlorobenzene	10	1.10	1.20		0.10	NO
1,4-Dichlorobenzene	10	7.60	7.60		0.00	NO

TABLE E.23 (Continued)

Fraction: Halogenated Compounds

UANG City Drain CW3 and UANG City Drain CW4

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
1,1,1-Trichlorethane	10	2.60	4.00		1.40	NO
Trichloroethene	10	ND	1.40		1.40	NO

UANG-S3-MW1 and UANG-S3-MW3

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Chlorobenzene	10	36.00	40.00		4.00	NO
1,2-Dichlorobenzene	10	4.80	5.10		0.30	NO
1,3-Dichlorobenzene	10	0.72	0.73		0.01	NO
1,4-Dichlorobenzene	10	7.60	7.90		0.30	NO

UANG City Drain CS6 and UANG City Drain CS7 (No analytes detected)

Fraction: Halogenated/Aromatic Compounds

UANG-S1-SB8 (7-9) and UANG-SB8 (5-7) (No analytes detected)

UANG-S1-SB6 (3-5) and UANG-SB6 (1-3) (No analytes detected)

UANG-S3-SB3 (4-6) and UANG-S3-SB3 (6-8) (No analytes detected)

UANG-S4-SB5 (5-7) and UANG-S4-SB5 (7-9) (No analytes detected)

UANG-S6-SB6 (6-8.5) and UANG-S6-SB6 (8.5-11) (No analytes detected)

UANG-S6-SB9 (6-8.5) and UANG-S6-SB9 (8.5-11) (No analytes detected)

UANG-S7-SB9 (2.5-4.5) and UANG-S7-SB9 (8.5-9.5) (No analytes detected)

Fraction: Semivolatile Organics

UANG City Drain CS6 and UANG City Drain CS7

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Pyrene	330	3600	4800	29		NO
bis (2-Ethylhexyl) phthalate	330	7200	6300	13		NO

TABLE E.23 (Continued)

UANG City Drain CW3 and UANG City Drain CW4

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Phenol	10	2	1		1	NO
1,3-Dichlorobenzene	10	2	2		0	NO
Napthalene	10	1	1		0	NO
2-Methylnapthalene	10	2	2		0	NO
bis (2-Ethylhexyl) phthalate	10	4	ND		4	NO

UANG-S2-SB3 (4.5-6.5) and UANG-S2-SB3 (6.5-8.5)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
2-Methylnapthalene	330	ND	730		730	NO
Phenanthrene	330	58	260		202	NO
Fluoranthene	330	ND	88		88	NO
Fluorene	330	ND	55		55	NO
Chrysene	330	ND	120		120	NO
bis (2-Ethylhexyl) phthalate	330	190	190		0	NO

UANG-S3-SB3 (4-6) and UANG-S3-SB3 (6-8)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
bis (2-Ethylhexyl) phthalate	330	ND	160		160	NO

UANG-S3-MW1 and UANG-S3-MW3

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Phenol	10	ND	4		4	NO
1,4-Dichlorobenzene	10	7	ND		7	NO
1,2-Dichlorobenzene	10	4	ND		4	NO
4-Methylphenol	10	ND	2		2	NO

UANG-S4-SB4 (6.5-9) and UANG-S4-SB4 (9-11)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Di-n-Butylphthalate	330	ND	540		540	NO

UANG-S5-SB3 (6-8.5) and UANG-S5-SB3 (8.5-11)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
bis (2-Ethylhexyl) phthalate	330	ND	120		120	NO

TABLE E.23 (Continued)

UANG-S6-SB6 (6-8.5) and UANG-S6-SB6 (8.5-11)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
bis (2-Ethylhexyl) phthalate	330	32	ND		32	NO

UANG-S4-SB5 (5-7) and UANG-S4-SB5 (7-9) (No analytes detected)

UANG-S6-SB4 (6-8.5) and UANG-S6-SB4 (8.5-11) (No analytes detected)

UANG-S6-SB9 (6-8.5) and UANG-S6-SB9 (8.5-11) (No analytes detected)

UANG-S7-SB9 (2.5-4.5) and UANG-S7-SB9 (8.5-9.5) (No analytes detected)

Fraction: Total Recoverable Petroleum Hydrocarbons

UANG City Drain CS6 and UANG City Drain CS7

PQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
100	1300	1600	21		NO

UANG-S2-SB3 (4.5-6.5) and UANG-S2-SB3 (6.5-8.5)

PQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
100	63	700	167	637	YES

UANG-S4-SB5 (5-7) and UANG-S4-SB5 (7-9)

PQL (mg/kg)	[Sample] (mg/kg)	[Duplicate] (mg/kg)	RPD (%)	Diff. (mg/kg)	Out of Limit
100	60	ND		60	NO

UANG-S3-SB3 (4-6) and UANG-S3-SB3 (6-8) (No analytes detected)

UANG-S4-SB4 (6.5-9) and UANG-S4-SB4 (9-11) (No analytes detected)

UANG-S5-SB3 (6-8.5) and UANG-S5-SB3 (8.5-11) (No analytes detected)

UANG-S6-SB4 (6-8.5) and UANG-S6-SB4 (8.5-11) (No analytes detected)

UANG-S6-SB6 (6-8.5) and UANG-S6-SB6 (8.5-11) (No analytes detected)

UANG-S6-SB9 (6-8.5) and UANG-S6-SB9 (8.5-11) (No analytes detected)

UANG-S7-SB9 (2.5-4.5) and UANG-S7-SB9 (8.5-9.5) (No analytes detected)

TABLE E.23 (Continued)

UANG City Drain CW3 and UANG City Drain CW4 (No analytes detected)

Fraction: Pesticides/PCBs

UANG City Drain CW3 and UANG City Drain CW4

Analyte	CRQL (ug/L)	[Sample] (ug/L)	[Duplicate] (ug/L)	RPD (%)	Diff. (ug/L)	Out of Limit
Dieldrin	0.05	0.021	0.031	-38	0.01	NO
Aldrin	0.05	0.05	0.042	17	-0.008	NO

UANG-S1-MW1 and UANG-S1-MW2 (No analytes detected)

UANG-S1-SB3 (4-6.5) and UANG-S1-SB3 (6.5-8.5)

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
Beta BHC	1.70	16.00	1.70	162	-14.3	YES

UANG City Drain CS6 and UANG City Drain CS7

Analyte	CRQL (ug/kg)	[Sample] (ug/kg)	[Duplicate] (ug/kg)	RPD (%)	Diff. (ug/kg)	Out of Limit
4,4-DDE	3.30	130.00	46.00	95	-84	YES

UANG-S1-SB8 (7-9) and UANG-S1-SB8 (5-7) (No analytes detected)

UANG-S1-SB6 (3-5) and UANG-S1-SB6 (1-3) (No analytes detected)

E.3 DATA QUALITY ASSESSMENT

The data quality assessment is based on accuracy, precision, completeness, and representativeness. A discussion of each follows.

E.3.1 PRECISION

The precision of a measurement is the agreement of multiple measurement values of the sample property, conducted under similar conditions. Analytical precision is expressed as the percentage of the difference between results of duplicate samples for a given compound or analyte. The RPD is calculated by the equation:

$$RPD = \frac{V1 - V2}{(V1 + V2)/2} \times 100\%$$

where V1, V2 = the two values obtained by analyzing the duplicate samples.

Acceptable levels of precision will vary according to the sample matrix, the specific analytical method, and the analytical concentration relative to the MDL.

Laboratory precision was determined using MS/MSD pairs for the organic fractions and LCS/LCSDs when provided. Rarely was data qualified for RPD being out of control limits, showing a high degree of precision.

E.3.2 ACCURACY

Accuracy is defined as the degree to which the measured value represents the true value of that parameter. Analytical accuracy is expressed as the %R of a compound or element that has been added to the environmental sample at a known concentration before analyses. The %R is calculated as follows:

$$\%R = \frac{Ss - So}{Sa} \times 100\%$$

where

So = the background value, obtained by analyzing the sample prior to spiking;

Sa = concentration of the spike added to the sample; and

Ss = value obtained by analyzing the sample with the spike added.

The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of similar matrix and concentration of contaminants. Method blank surrogate recoveries, initial and continuing calibrations, LCS, and MS/MSD results are used to evaluate the laboratory accuracy. The degree of accuracy and the percent recovery expected from the analysis of QA samples and spiked samples depend on the matrix, method of analysis, and compound or element determined. From %R data indicated on Table E.24, it is clear that the overall accuracy of the analysis was very good.

TABLE E.24

PERCENT OF ACCEPTABLE ACCURACY AND PRECISION RESULTS

Fraction	Matrix	Number of Samples	MS/MSD Pairs	MS/MSD %R (1)	LCS\ LCSD pairs	LCS\ LCSD %R (1)	Surrogate %R (1)
Inorganic Metal	Water	31	3	82.0	NA	98.7	NA
Inorganic Metal	Soil	67	5	66.2	NA	95.6	NA
Volatile	Water	9	0	NA	2	100	95.8
Volatile	Soil	52	5	100	5	100	98.0
SW8010/SW8020	Water	51	3	100	11	100	100
SW8010/SW8020	Soil	87	6	100	11	100	100
Semivolatile	Water	43	2	81.8	15	94.2	98.5
Semivolatile	Soil	127	8	92.6	15	97.6	99.6
Pesticide/PCB	Water	25	2	97.8	6	100	89
Pesticide/PCB	Soil	41	3	83	5	100	100
TRPH	Water	22	2	100	NA	NA	NA
TRPH	Soil	129	9	98.9	NA	NA	NA
SW8015M (Diesel)	Soil	8	1	100	1	100	*
SW8015M (Gas)	Soil	8	1	100	1	100	81
Resampling Event							
SW8010	Soil	16	1	100	1	100	95
SW8080	Soil	16	1	83	1	100	42.5
SW8080	Water	3	1	100	1	100	100

(1) Percentage of results within QC limits.

* No surrogate analysis was performed due to analyst oversight.

E.3.3 REPRESENTATIVENESS

Representativeness expresses the degree the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process, or an environmental condition.

Sample selection and handling procedures were intended to obtain the most representative sample possible. Representativeness of specific samples were achieved using the following methods:

- Collecting samples from locations representative of site conditions;
- Using appropriate sampling procedures and equipment;
- Using appropriate analytical methodologies for parameters and detection limits required; and
- Analyzing within appropriate holding times.

To assess the representativeness of the sample collection procedures, some samples were collected in duplicate. One of the duplicates was given a coded (false) sample identifier, and both the original sample and the duplicate were analyzed. The RPD values of each analyte in the sample and the corresponding coded duplicate are a measure of representativeness. Acceptable levels of RPD will vary according to the sample matrix, the specific analytical method, and the analytical concentration. A second QC sample type used to evaluate representativeness is the blank. Field and laboratory QC blanks are used to evaluate concentrations of possible interference to target compound analyses and quantitation. Twelve out of 39 analytes detected in duplicates were out of control for field duplicates. Seven of the 12 out of control results, were due to non-detect (ND) in the samples. Overall sampling shows good representativeness.

E.3.4 COMPLETENESS

The completeness of the data was determined by comparing the amount of valid data obtained with the amount of data expected from the field or laboratory management system. It is expressed as percent completeness (%C), calculated according to the following equation:

$$\%C = \frac{N_A}{N_I} \times 100$$

where

N_A = the actual number of valid analytical results obtained, and

N_I = the theoretical number of results obtainable under ideal conditions.

The specific objective for completeness for this project is greater than 90 percent. Overall results shown on Table E.25 indicate a completeness of 99.06% with none of the specific fraction results falling below 95%.

TABLE E.25

SUMMARY OF PERCENT COMPLETENESS

Fraction (# of Analytes)	Samples Analyzed	Unusable Analyses (R flag)	Percent Completeness
Inorganic Metal (13)	82	48	95.5
VOCs (39)	52	65	96.8
Halogenated/Aromatics (36/8)	121	0	100
Semivolatile (65)	150	45	99.5
Pesticide/PCB (20)	37	0	100
TRPH (1)	129	1	99.2
Diesel	8	0	100
Gasoline	8	0	100
Resampling Event			
Halogenated/Aromatics (24)	16	0	100
Pesticide/PCB (26)	19	0	100
Overall			99.06

A list indicating samples that were considered as unusable is included as Table E-2.

E.4 CONCLUSION

The QC criteria established for this project were met overall. Guidelines for each method were followed by the laboratory and the results show a high degree of precision, accuracy, and completeness. With the exception of the rejected data, the values generated through the analysis can be applied confidently within the qualifications discussed.

End of QA/QC Report No. 1

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Data Validation Summary

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ACRONYMS

Associated Samples	Any sample related to a particular QC analysis, for example: • For ICV, all samples run under the same calibration curve. • For duplicate RPD, all SDG sample digested/distilled of the same matrix. • For field blank, all samples collected, stored and shipped with the field blank.
AA	Atomic Absorption - instrument utilized in the analysis of metals
BFB	Bromofluorobenzene - a non-target standard used to check the tuning of the GC/MS instrument used for volatile organic analysis
BNA	Base/Neutral/Acids Compounds - the chemical properties of target analytes which comprise the complete semivolatile organic list of analytes.
Calibration Curve	A plot of responses versus concentration of multi concentration standards.
CCB	Continuing Calibration Blank - a deionized water sample run every ten samples designed to detect any carryover contamination.
CCV	Continuing Calibration Verification - a standard run every ten samples designed to test instrument performance.
CLP	Contract Laboratory Program - a USEPA program designed to audit and qualify laboratories to participate in the analysis of samples generated under superfund effort.
CRDL	Contract Required Detection Limit.
CV	Cold Vapor - mercury analysis technique.
CVAA	Cold Vapor Atomic Absorption - see CV
DFTPP	Decafluorotriphenylphosphine - a non target standard used to check the tuning of the GC/MS instrument used in semivolatile organic analysis.
Field Blank	Field blanks are intended to identify contaminants that may have been introduced in the field. Examples are trip blanks, travel blanks, rinseate blanks, and decontamination blanks.
Field Duplicate	A duplicate sample generated in the field, not in the laboratory. They are two separated samples taken from the same source, stored in separate containers and analyzed independently.
GC	Gas Chromatography - organics analysis instrumentation.

GC/MS	Gas Chromatography/Mass Spectrometry - organics analysis instrumentation.
GFAA	Graphite Furnace Atomic Absorption - low level metals analysis techniques.
Holding Time	The time from sample collection to laboratory preparation and/or analysis.
ICB	Initial Calibration Blank - first blank standard run to confirm the calibration curve.
ICP	Inductively Coupled Plasma - instrument utilized in the simultaneous analysis of target metals.
ICAL	Initial Calibration - see calibration curve
ICS	Interference Check Sample - spike sample containing known interfering compounds (metals) to demonstrate instrument performance and separation.
ICV	Initial Calibration Verification - first standard run to confirm the calibration of the instrument is stable.
IDL	Instrument Detection Limit - the lowest detection observed greater than five times the instrument background noise level.
Initial Calibration	The establishment of a calibration curve with the appropriate number of standards and concentration range. The calibration curve plots absorbence or emission versus concentration of standards.
IS	Internal Standard - Non-target standard spiked into all samples, after sample preparation, but prior to analysis.
LCS	Laboratory Control Sample - a spiked laboratory generated sample to demonstrate the precision and accuracy of all facets of the analysis (sample preparation, through analysis and quantitation).
Matrix	The component or substrate (e.g. surface water, sediment) which contains the analyte of interest.
MB	Method Blank - An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank is prepared and analyzed along with the investigative samples and is used to document contamination resulting from the analytical process.
MD	Matrix Duplicate - an intralaboratory split sample which is used to document the precision of a method in a given sample matrix.
MDL	Method Detection Limit - the minimum concentration of a substance that can be measured and reported with 99% confidence

	that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix Spike - introduction of a known concentration of analyte into a sample to provide information about the effect of the sample matrix on the sample preparation and measurement methodology.
MSA	Method of Standard Addition - known spike amounts introduced into aliquots of a field sample at a minimum of four different concentrations in order to establish matrix affects and quantitate a metal using the graphite furnace technique.
MSD	Matrix Spike Duplicates - intralaboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix.
%D	Percent Difference - the calculated difference between the observed and expected concentrations.
%R	Percent Recovery - the calculated result as a percentage of the expected concentration.
PDS	Post Digestion Spike - The addition of a known amount of standard after digestion. (Also identified as analytical spike, or spike, for furnace analyses.)
PRDL	Project Required Detection Limit - the detection limits established between the laboratory and project requirements to ensure usable data.
PRL	Project Reporting Limit - the laboratory established reporting limits based on analytical method and laboratory performance.
QA	Quality Assurance
QC	Quality Control
r	Correlation Coefficient
RPD	Relative Percent Difference - the measured value calculated using the difference between two results divided by the average of the two results and multiplied by 100.
RRF	Relative Response Factor - comparison of target analyte response to response of associated internal standard.
RSD	Relative Standard Deviation - calculated value determined by the result of the standard deviation observed by two results divided by their average multiplied by 100.

SDG	Sample Delivery Group - defined by one of the following, whichever occurs first: • Case of field samples • each twenty field samples in a Case • each 14-day calendar period during which field samples in a Case are received, beginning with receipt of the first sample in the SDG.
Serial Dilution	A sample run at a specific dilution to determine whether any significant chemical or physical interferences exist due to sample matrix effects. (ICP only)
SOP	Standard Operating Procedures - laboratory specific methodology based on published method.
SOW	Statement of Work - USEPA CLP laboratory analytical methodology.
Surrogate	Non-target compounds spiked into the sample prior to preparation and analysis. Sample specific quality control check to ensure sample extraction efficiency and analytical procedures are in control.
SVOC	Semivolatile Organic Compounds
SW	USEPA Test Methods for Evaluating Solid Wastes Physical/Chemical Methods - reference document for analytical methodology.
TPH	Total Petroleum Hydrocarbons
TRPH	Total Recoverable Petroleum Hydrocarbons
VOC	Volatile Organic Compounds

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E.1 INTRODUCTION

Soil and groundwater samples were collected to determine the presence and/or absence, and the extent of contamination present at sites 1-7, at the Utah Air National Guard (UANG) Base. There were 25 investigative samples, three field duplicates, six trip blanks, two field blanks and three rinse blanks collected and analyzed. Original collection of samples occurred between August 16, 1995 and August 28, 1995. However, the laboratory did not, correctly, follow procedures and instructions contained in the analytical methods and/or specific methods for this project. Re-sampling was done on 11/8/95 for Site 6 and 11/6/95 for Site 1,2,3. Re-sampling and re-analyses was performed at the following sites:

Site	Re-analysis	Reason
UANG-S1-MW01-GW2	SW8010/8020	No 2nd column confirmation of positive hits
UANG-S1-MW02-GW2	SW8010/8020	No 2nd column confirmation of positive hits
UANG-S2-MW01-GW2	SW8010/8020	No 2nd column confirmation of positive hits
UANG-S2-MW02-GW2	SW8010/8020	No 2nd column confirmation of positive hits
UANG-S2-MW03-GW2	SW8010/8020	No 2nd column confirmation of positive hits
UANG-S3-MW01-GW2	SW8010/8020	No 2nd column confirmation of positive hits
UANG-S6-MW01	arsenic	Improper preparation method
UANG-S6-MW02	arsenic	Improper preparation method
UANG-S6-MW03	arsenic	Improper preparation method
UANG-S6-MW04	arsenic	Improper preparation method

Soil and water samples were collected for semivolatile organic compounds, purgable halogenated and aromatic, volatile compounds, total recoverable petroleum hydrocarbons (TRPH), pesticides and polychlorinated biphenyls (PCBs) and metals analysis. The samples were analyzed by Data Chem Laboratories of Salt Lake City, Utah.

The laboratory analyzed the samples using the following methods:

- 13 Priority Pollutant Metals, Metals by SW6010 and the appropriate SW7000 Series prepped by Method SW3010, 3020 or 3050.
- Purgable halogenated volatile organics by Method SW8010,
- Purgable aromatic volatile organics by Method SW8020,
- Semivolatile organic compounds (SVOCs) [Base/Neutral/Acids (BNAs)] by Method SW8270,
- PESTs/PCBs by Method SW8080,
- TRPH by Method 418.1,

The analysis methods used are specified in USEPA, 1986a, *Test Methods for Evaluating Solid Wastes,* SW846, 3rd Edition ("SW" Methods); and *Methods for Chemical Analysis of Water and Wastes,* EPA 600/4-79-0202 ("E" methods).

Level C data review and validation was performed using guidelines specified in Section 6.2 of DOE/HWP-65/R1. Specific criteria used for data assessment were based on the EPA CLP *National Functional Guidelines for Organic Data Review,* dated December 1990; and *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis,* dated February 1994.

E.1.1 Criteria Used to Assess Laboratory Data Quality

The Quality Control (QC) criteria used to assess data quality included technical holding times, initial instrument calibration (ICAL), initial and continuing calibration verification (ICV and CCV), preparation blanks (PB), initial and continuing calibration blank (ICBs and CCBs), matrix spike/matrix spike duplicates (MS/MSDs), inductively coupled plasma analysis (ICP) interference check samples (ICSs), laboratory control samples (LCSs), matrix duplicate sample analysis, ICP serial dilution, graphite furnace atomic absorption (GFAA) and post digestion spike results.

E.1.2 Data Validation Qualifiers

Specific sample analytes traceable to QC violations were qualified as estimated ("J"), undetected ("U"), estimated as undetected ("UJ"), or unusable ("R"). Estimated and estimated as undetected field sample data are shown in Table E.1.2.1. Unusable field sample data are shown in Table E.1.2.2. The EPA qualifiers assigned to analytical results are shown in Table E.1

E.1.3 Holding Time Compliance

Specific holding time criteria is presented in the individual analysis sections. All holding times, for each fraction, for this project were met except re-analyzed, diluted analytes for certain VOCs (See Section E.2.4.2).

TABLE E.1
EPA QUALIFIERS ASSIGNED TO ANALYTICAL RESULTS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Organic Data Validation Qualifiers	
U	The analyte is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in this sample (e.g., the reporting limit).
J	The analyte is positively identified, but the associated numerical value may not reflect the amount actually present in the environmental sample. The data can be used for many purposes. This data should be seriously considered for decision making.
R	The data are unusable for all purposes. The presence or absence of the analyte has not been verified. Re-sampling and re-analysis are necessary to confirm or deny its presence.
UJ	Combines the "U" and "J" qualifiers. The analyte was not present above the level of the associated value. The associated numerical value may not accurately or precisely represent the concentration in the sample.
N	The analysis indicates that an analyte is present. There are strong indications that the identity is correct.
NJ	Combines the "N" and "J" qualifiers. The analysis indicates that the analyte is "tentatively identified". The associated numerical value may not reflect the amount actually present in the environmental sample.

Inorganic Data Validation Qualifiers	
U	The material was not detected above the level of the associated value. The associated value is the project reporting level *(e.g., the non-detect level).*
J	The associated value is an estimated quality [*e.g., the value falls between the method detection limit (MDL) and the practical quantitation limit (PQL)].*
R	The data are unusable. *(Note: Analyte may or may not be present).*
UJ	The material was not detected. The associated value is an estimate and may be inaccurate or imprecise.

E.2 QUALITY CONTROL ASSESSMENT

E.2.1 Metals Analysis Using EPA Methods SW6010, SW7060, SW7421, SW7470/71, SW7740 and SW7841

E.2.1.1 Introduction

Twelve field samples, four soil and eight aqueous, two rinseate blanks and two field blanks were analyzed for the 13 priority pollutant metals included in this analytical program. Additionally, eleven field samples were analyzed for arsenic only. ICP analysis (SW846, Method 6010) was performed for all metal analytes except arsenic (As), lead (Pb), Selenium (Se) and thallium (Tl), which were analyzed using graphite furnace atomic absorption, and mercury (Hg), which was analyzed by cold vapor atomic absorption.

Samples were to be digested using SW846 Methods 3010, 3020 and 3050, however the laboratory used a variety of other methods. The laboratory was instructed to re-digest and re-analyze the samples using the appropriate digestion procedure. All samples were re-digested and re-analyzed except UANG-S6-MW05-GW2, UANG-BG-MW02-GW2 and UANG-RB01-GW2. Validation for these samples was performed on the original data. These samples were digested using CLP Method SOW ILM04.0 or SW3015. Four samples, UANG S6-MW01-GW2, UANG-S6-MW02-GW2, UANG-S6-MW03-GW2, and UANG-S6-MW04-GW2 were re-sampled on November 8, 1995 and re-analyzed.

E.2.1.2 Technical Holding Times

Holding times were measured from the date of collection to the date of analysis. Chain-of-custody forms were used to verify technical holding times. The specified holding times for preserved aqueous and soil/sediment samples for metals are 28 days for mercury and 180 days for all other analytes. All samples met technical holding times.

E.2.1.3 Initial and Continuing Calibration Verification

For ICP analysis, a blank and at least one standard must be used in establishing the calibration curve. The GFAA ICAL required a blank and three standards, one of which represents the contract required detection limit (CRDL). The ICAL curve for CVAA calibration, used in analysis of mercury, requires one blank and four standards. The multi-standard ICAL curves generated must produce a linear least squares correlation coefficient (r) greater than or equal to 0.995. All of the calibration requirements were met.

To verify the accuracy of the ICAL, an ICV standard (prepared from a standard source other than the source used to prepare the ICAL standards) is analyzed. A CCV standard, of a known concentration, must be analyzed at a 10% frequency for all analytes and after the last analytical sample in each run. The accuracy of the ICV and the CCV is based on the percent recoveries (%R). The %R range criterion is 80-120% for Hg and 90-110% for all other metals. All ICV and CCV results met the established control criteria.

E.2.1.4 Blanks

Three types of blanks, field blanks, laboratory blanks and method preparation blanks, were used to qualify data. Method blanks were prepared and analyzed at a frequency of one per batch of twenty samples. Qualification of results were made if analyte contaminant concentration in the associated blank is above the detection limit and if the lowest analyte concentration is less than five times the blank concentration.

At least one method preparation blank was prepared with each batch of samples. All method blanks were found to be free of contamination except:

Blank	Analyte	Conc.	Affected Samples	Action
Prep Blank (9/24/95)	cadmium	-2.01 µg/L	UANG-RB1-GW2, UANG-BG-MW02-GW2	"UJ"
	copper	2.7 µg/L	UANG-RB1-GW2, UANG-BG-MW02-GW2	"U"
Prep Blank (8/31/95)	mercury	-0.088 µg/L	UANG-RB1-GW2	"UJ"
Prep Blank (11/22/95)	lead	1.69 µg/L	UANG-S4-MW01-GW2	"U"
			UANG-S7-MW02-GW2	"UJ"
			UANG-RB03-GW2	"U"
			UANG-S2-MW02-GW2	"U"
			UANG-S2-MW03-GW2	"U"
			UANG-S2-MW01-MW2	"U"
			UANG-BG-MW01-GW2	"U"
			UANG-FB03-GW2	"U"
Prep Blank (9/8/95)	mercury	-0.052 µg/L	UANG-BG-MW2-GW2	"UJ"
			UANG-RB03-GW2	"UJ"
			UANG-S2-MW01-GW2	"UJ"
			UANG-FB03-GW2	"UJ"
			UANG-S7-MW02-GW2	"UJ"
			UANG-S4-MW01-GW2	"UJ"
			UANG-FB02-GW2	"UJ"
			UANG-S7-MW01-GW2	"J"
			UANG-S2-MW02-GW2	"J"
			UANG-BG-MW01-GW2	"J"
			UANG-S2-MW03-GW2	"J"
Prep Blank (10/30/95)	zinc	4.23 µg/L	UANG-S7-MW02-GW2	"U"
			UANG-FB02-GW2	"U"
			UANG-RB03-GW2	"U"
			UANG-S2-MW02-GW2	"U"
			UANG-S2-MW03-GW2	"U"
			UANG-BG-MW01-GW2	"U'

The listed affected samples that were qualified as non-detect "U" contained less than five times the blank value. Affected samples qualified "J" or "UJ" are considered estimated values due to a negative blank result.

One laboratory blank must be analyzed for every ten samples and after each CCV for ICP, CVAA and GFAA analysis. Qualification of analytes in field samples is required if identifiable quantities of target compounds are found in the laboratory blanks and the analytical results are less than five times the absolute value of the associated blank results. All ICBs and CCBs were free of contamination except:

Blank	Analyte	Conc.	Affected Samples	Action
CCB (11/21/95)	cadmium	1.59 μg/L	None	None
ICB (8/31/95)	mercury	-0.08 μg/L	UANG-RB1-GW2	"UJ"
ICB(9/24/95)	copper	2.69 μg/L	UANG-RB1-GW2	"U"
CCB(9/24/95)	copper	2.69 μg/L	UANG-RB1-GW2, UANG-BG-MW02	"U" "U"
CCB(10/30/95)	antimony	32.02 μg/L	UANG-S4-MW01 UANG-FB03	"U" "U"
CCB(10/20/95)	beryllium	0.018 μg/L	None	None
CCB1(9/8/95)	mercury	-0.035 μg/L	UANG-BG-MW02	"UJ"
CCB2 (9/8/95)	mercury	0.02 μg/L	None	None

The listed affected samples that were qualified as non-detect "U" contained less than five times the blank value. Affected samples qualified "J" or "UJ" are considered estimated values due to a negative blank result. No action was taken if the concentration in the samples exceeded five times the blank concentration or the sample concentration was non-detect.

Field QC blanks were analyzed to verify that no contamination occurred during sampling. These field QC blanks (analyzed for this fraction) were equipment rinseate blanks and field blanks. Nine samples were qualified as having non-detect results "U" due to the following field blank contamination:

TABLE E.2
FIELD BLANK CONTAMINATION

	CONCENTRATION (μg/L)			
Analyte	RB1	RB3	FB2	FB3
cadmium	nd	nd	nd	2.8
chromium	77	nd	nd	3.8
zinc	14	nd	nd	500
selenium	nd	16J	13J	nd
nickel	39	nd	nd	nd

nd=non-detect

Blank	Analyte	Concentration	Affected Samples	Action
FB02	selenium*	13 µg/L	None	None
FB3	cadmium*	2.8 µg/L	None	None
	chromium	3.8 µg/L	UANG-BG-MW1-GW2	"U"
			UANG-S2-MW1-GW2	"U"
			UANG-S2-MW2-GW2	"U"
			UANG-S2-MW03-GW2	"U"
	zinc	500 µg/L	UANG-RB3-GW2	"U"
			UANG-S2-MW2-GW2	"U"
			UANG-BG-MW01-GW2	"U"
			UANG-S2-MW3-GW2	
			UANG-S2-MW1-GW2	"U"
RB1	chromium	77 µg/g	UANG-BG-MW2(0-2)	"U"
			UANG-BG-MW2(2-4)	"U"
			UANG-BG-MW2(4-6)	"U"
			UANG-BG-MW2(6-8)	"U"
	zinc	14 µg/g	None	"U"
	nickel	39 µg/g	UANG-BG-MW2(0-2)	"U"
			UANG-BG6-MW2(2-4)	"U"
			UANG-BG-MW2(4-6)	"U"
			UANG-BG-MW2(6-8)	"U"
RB3	selenium*	16 µg/L	None	

* No detectable levels of analyte found in associated sample(s) so no action was required.

E.2.1.5 Matrix Spike/Matrix Spike Duplicates

An MS or MSD must be included for every ten samples (one MS/MSD pair per 20 samples), for each matrix analyzed. Spiked-sample analysis provides information about the effect of each sample matrix on digestion and measurement methodologies. Samples identified as field blanks cannot be used for spiked-sample analysis. The %R values for all elements must be within the limits of 75-125%. If the measured %R value falls outside of this range, all associated samples must be qualified as estimated. If the analytical results for an analyte fall below 30%, these results must be deemed unusable in all associated samples. Field blanks are not considered investigative field samples and are, therefore, not qualified based on MS/MSD results.

The 10% frequency requirement for both soil and water matrices was met. The %R fell outside of the QC criteria windows for several MS/MSDs requiring the qualification of 25 sample values as "J" (≥MDL) or "UJ" (<MDL). The %R for the MS/MSDs were less than 30% warranting specific analytes in several samples be deemed unusable. Unusable "R" flags were applied to five antimony results for possible matrix effects resulting in the MS/MSD recoveries below 30%.

Sample UANG-RB1-GW2 was run as a matrix spike/matrix spike duplicate. No water samples were associated with this sample, and no qualifications were based on the results.

The laboratory supplied results for MS/MSD RPDs. Fifteen field samples were qualified "J", "UJ" due to MS/MSD RPD outliers.

E.2.1.6 Interference Check Sample

The ICP Interference Check Sample (ICS) verifies the laboratory's ICP inter-element and background correction factors. Verification of the interelement and background correction factors was performed at the beginning and the end of each analytical run. As per the case narratives, all interference check analytes were within quality control limits.

E.2.1.7 Laboratory Control Samples

An LCS is a laboratory reagent blank spiked with known concentrations of the target analytes and is processed with samples through sample preparation procedures. The LCS spike recovery indicate accuracy relevant to all samples and matrices within an analytical batch and are strictly a measure of analytical accuracy, conditions independent of samples and matrices. A successful result required that the %Rs for all analytes fall within the control limits of 80-120%. All Laboratory Control Samples were within the required limits.

E.2.1.8 Duplicate Sample Analysis

One laboratory duplicate sample is analyzed for every 10 samples and for each matrix in the sample delivery group (SDG). The resulting relative percent difference (RPD) should be less than or equal to 20% for aqueous samples and less than or equal to 35% for soil and sediment samples, where measured analyte results are greater than five times the CRDL. Therefore, samples that are identified as field blanks are not used. Duplicate analyses are indicators of overall precision based on each sample matrix. For duplicate analyte concentrations less than five times the CRDL, the difference between the two reported results should be less than the CRDL for aqueous samples and two times the CRDL for soil/sediment samples.

Four water samples were qualified as either "J" or "UJ" due to a matrix duplicate RPD outlier for arsenic. In addition, four soil samples were qualified "J" or "UJ" due to an arsenic matrix duplicate RPD outlier. No matrix duplicate for arsenic was associated with sample UANG-S6-MW5-GW2. This sample was qualified "J".

No mercury matrix duplicate was performed. No qualifications were made for mercury results due to matrix duplicates non-compliance. However, qualifications were made based on MS/MSD outliers.

No matrix duplicate was run for any analyte in sample UANG-BG-MW2-GW2. As this is a project requirement, all results were qualified "J", "UJ".

Sample UANG-FB02-GW2 was used as a matrix duplicate. Samples identified as field blanks cannot be used for duplicate sample analysis as the matrix duplicate is used

to demonstrate acceptable sample matrix precision by the laboratory at the time of analysis. No results were qualified based on these results.

Field duplicates are analyzed to determine the representativeness of sampling procedures. One member of the duplicate pair is given a coded (false) identifier so that the sample analysis is not biased during analysis. Three sets of field duplicates collected and were analyzed for metals. UANG-BGMW2(6-8) is a soil field duplicate of UANG-BG-MW2(4-6). UANG-S2-MW3-GW2 is a field duplicate of UANG-S2-MW2-GW2 and UANG-S5MW2-GW2 is a field duplicate of UANG-S5-MW01-GW2 Any QC outliers will qualify only the pair of samples. All field duplicates met the above QC criteria.

E.2.1.9 ICP Serial Dilution

One serial dilution is performed for every ten samples and for each matrix. A serial dilution is performed for metals analyzed by ICP to determine if any physical or chemical interferences exist in the sample matrix. If the concentration in the original sample is greater than 50 times the IDL, a five-fold dilution must agree within ± 10% of the difference between the dilution and the original result. Four soil samples were qualified as "J" or "UJ" because copper values did not meet serial dilution criteria.

E.2.1.10 Graphite Furnace Atomic Absorption

GFAA duplicate injections percent relative standard deviation (%RSD) must be less than 20% with a Post Digestion Spike (PDS) %R between 85-115%. Level C validation does not require the review of graphite duplicate %RSD from the raw data.

Criteria for validation of PDS is based on SW846, Section 7000. Nineteen sample results were estimated due to a post digestion spike not being performed. All Method of Standard Addition results were compliant.

E.2.1.11 Other Comments

The laboratory flagged several samples "B" as a reported value which falls between the CRDL and the MDL. The "B" flag was replaced by a "J" flag for consistency with similar findings with the organic analytes. The following lists those samples.

Sample	Analyte
UANG-BGMW2(0-2)	thallium
UANG-BGMW2(2-4)	thallium
UANG-BGMW2(4-6)	thallium
UANG-RB03-GW2	selenium

The limits selected for reporting are the laboratory's method detection limits rather than the higher CRDLs. Selenium has an elevated detection of 12 µg/L due to dilutions, except for UANG-RB1-GW2 (1.2µg/L). However, it should be noted, that sample UANG-BG-MW02-GW2 underwent an even greater dilution rendering a selenium detection limit of 60 µg/L due to severe matrix interference.

E.2.2 SEMIVOLATILE ORGANIC ANALYSIS BY GC/MS USING EPA METHOD SW8270

E.2.2.1 Introduction

The Semivolatile Organic Compounds, also called BNAs, are assessed by QC criteria similar to those used for the volatile fraction. The EPA method of SVOCs requires analysis by GC/MS. A total of 25 samples including four soil/sediment and 21 aqueous samples, including field blanks, were analyzed for 65 target compounds. Laboratory QC data were reviewed for technical holding time, GC/MS instrument performance check, ICAL and CCAL, blanks, surrogate spike compounds, and MS/MSDs.

Three different preparation methods were used to extract the samples. The following table lists the preparation method for the samples reviewed and the quality control samples associated with these samples:

TABLE E.3
PREPARATION METHODS FOR SEMIVOLATILE DATA

	Prep Method	
3550	**3510**	**3520**
BGMW2(0-2)	UANG-RB1*	R1303-GW2
BGMW2(2-4)	S6-MW01-GW2	S2-MW01-GW2
BGMW2(4-6)	S6-MW02-GW2	S2-MW02-GW2
BGMW2(6-8)	S6-MW03-GW2	S2-MW03-GW2
	S6-MW04-GW2	BG-MW01-GW2
	S6-MW05-GW2	FB03-GW2
	S3-MW01-GW2	
	S3-MW02-GW2	
	BG-MW02-GW2	
	S7-MW02-GW2	
	S7-MW01-GW2	
	S4-MW01-GW2	
	S5-MW01-GW2	
	FB02-GW2	
	SS-MW02-GW2	
Method Blank (1)	Method Blank (3)	Method Blank (1)
Lab Control Standard (1)	Lab Control Standard (3)	Lab Control Standard (1)
MS/MSD	MS/MSD	MS/MSD

*Associated with soil samples.

E.2.2.2 Holding Times

Holding times are measured form the time of collection to the time of extraction and analysis. The technical holding times are seven days for aqueous samples and 14 days for soil samples from time of collection to extraction. Sample extracts must then be analyzed 40 days from the data of extraction. The technical holding times were met for all samples.

E.2.2.3 GC/MS Instrument Performance Check

Decafluorotriphenylphosphine (DFTPP) is used as the tuning standard for BNA analysis. A performance check was performed every 12 hours. In all cases the DFTPP performance check was performed and met the following criteria indicated on Table E.4. All standards, samples, blanks and QC samples were analyzed within 12 hours of the injection of the DFTPP check standards as required.

TABLE E.4

PERFORMANCE CHECK USING

DECAFLUOROTRIPHENYLPHOSPHINE

m/z	Ion Abundance Criteria
51	30.0 - 60.0% of m/z 198
68	Less than 2.0% of m/z 69
69	Present
70	Less than 2.0% of m/z 69
127	40.0 - 60.0% of m/z 198
197	Less than 1.0% of m/z 198
198	Base peak, 100% relative abundance
199	5.0 - 9.0% of m/z 198
275	10.0 - 30.0% of m/z 198
365	Greater than 1.0% of m/z 198
441	Present, but less than m/z 443
442	Greater than 40.0% of m/z 198
443	17.0 - 23.0% of m/z 442

E.2.2.4 Initial Calibration

Calibration curves, consisting of one blank and five standards were prepared. Standards of 20, 50, 80, 120 and 160 µg/L were made containing target compounds, internal standards and system monitoring compounds. The instrument must demonstrate an RRF of greater than or equal to 0.05 for each compound and a %RSD result of less than or equal to 30%. Twenty-five samples were qualified "J" or "UJ" due to %RSD values greater than 30%.

E.2.2.5 Continuing Calibration

A CCAL must be analyzed at the beginning of each 12-hour analysis period after the analysis of the instrument performance check but before the analysis of any blanks of samples. A midrange standard is used for the CCAL analysis. The RRF for each target analyte must be greater than or equal to 0.05. The %D between the mean ICAL RRF and the CCAL RRF for each compound must be within ± 25%. Nineteen samples were qualified "J" or "UJ" because the %D criterion was exceeded.

E.2.2.6 Blanks

Qualification of data may be based on the method blank analysis. If concentrations of analytes in the field samples are greater than the detection limit but are less than five times the contaminant concentration in the associated laboratory blanks (10 times for common laboratory contaminants), the analyte is qualified as non-detect "U" at the value reported. If concentrations of analytes in the field samples are less than five/ten times the contaminant concentration in the associated laboratory blanks and are also less than the detection limit, the results are qualified non-detect "U" at the detection limit. Seven samples were qualified for contamination of di-n-butylphthalate.

Field QC blanks are analyzed to verify that no contamination occurred during sampling. Field QC blanks analyzed for the semivolatile fraction include equipment rinseate blanks and field blanks. No contamination was found in any field blank.

E.2.2.7 Surrogate Spike Compounds

Six surrogate spike compounds are used to calculate the %R for BNA analytes (See Table E.5 for BNA surrogates and Table E.6 for associated target analytes). Qualification is only applied to samples if two surrogates in the same fraction exceed the control limits, or if a single surrogate has a recovery of less than 10%. Sample re-analysis is to be performed if the surrogate %R results are outside the recovery criteria shown on the following table:

TABLE E.5

SURROGATE RECOVERY LIMITS

Surrogate	Water %R	Soil/Sediment %R
2-fluorophenol	21-100	25-121
phenol-d5	10-94	24-113
nitrobenzene-d5	35-114	23-120
2-fluorobiphenyl	43-116	30-115
2,4,6-tribromophenol	10-123	19-122
terphenyl-d14	33-141	18-137

One sample S6-MW01-GW2 did not meet the surrogate recovery criteria for the base/neutral fraction. All B/N compounds were qualified "UJ" (< MDL) as estimated, non-detected results. 2-fluorophenol did not meet %R criteria in the preparation blank BL-99633-1. Professional judgment deemed this an isolated occurrence and no qualification action was required.

TABLE E.6
BASE/NEUTRAL/ACID SURROGATE COMPOUNDS WITH ASSOCIATED TARGET ANALYTES

Base/Neutral (B/N) Fraction Surrogates:	
Nitrobenzene-d_5 (NBZ)	2-fluorobiphenyl (FBP)
Terphenyl-d_{14} (TPH)	
Base/Neutral (B/N) Fraction Target Compounds:	
dibenzofuran	indeno(1,2,3-cd)pyrene
2,4-dinitrotoluene	dibenz(a,h)anthracene
diethylphthalate	benzo(g,h,i)perylene
4-chlorophenyl-phenylether	bis(2-chloroethyl)ether
fluorene	1,3-dichlorobenzene
4-nitroaniline	1,4-dichlorobenzene
n-nitrosodiphenylamine	1,3-dichlorobenzene
4-bromophenyl-phenylether	2,2'-oxybis(1-chloropropane)
hexachlorobenzene	N-nitroso-di-n-propylamine
phenanthrene	hexachloroethane
anthracene	nitrobenzene
carbazole	isophorone
di-n-butylphthalate	bis(2-chloroethoxy)methane
fluoranthene	1,2,4-trichlorobenzene
pyrene	naphthalene
butylbenzylphthalate	4-chloroaniline
3,3'-dichlorobenzidine	hexachlorocyclopentadiene
benzo(a)anthracene	2-chloronaphthalene
chrysene	2-nitroaniline
bis(2-ethylhexyl)phthalate	dimethylphthalate
di-n-octylphthalate	acenaphthylene
benzo(b)fluoranthene	2,6-dinitrotoluene
benzo(k)fluoranthene	3-nitroaniline
benzo(a)pyrene	acenaphthene
hexachlorobutadiene	2-methylnaphthalene
Acid (A) Fraction Surrogates:	
phenol-d5 (PHL)	2-fluorophenol (2FP)
2,4,6-tribromophenol	
Acid (A) Fraction Target Compounds:	
2,4-dinitrophenol	4-methylphenol
4-nitrophenol	2-nitrophenol
4,6-dinitro-2-methylphenol	2,4-dimethylphenol
pentachlorophenol	2,4-dichlorophenol
phenol	4-chloro-3-methylphenol
2-chlorophenol	2,4,6-trichlorophenol
2-methylphenol	2,4,5-trichlorophenol

E.2.2.8 Matrix Spikes/Matrix Spike Duplicates

A matrix Spike (MS) or matrix spike duplicate (MSD) is to be run for every 10 samples (one MS/MSD pair per 20 samples) and should be analyzed for all matrices present in every SDG. One soil/sediment sample and two aqueous samples were spiked with the standard MS/MSD solution to meet the frequency limits and control criteria listed on the following table.

TABLE E.7

SEMIVOLATILE ORGANIC MS/MSD CRITERIA

	Water		Soil/Sediment	
Compound	**%R**	**RPD**	**%R**	**RPD**
1,2,4-trichlorobenzene	52-115	28	44-142	50
1,4-dichlorobenzene	20-124	28	20-124	50
2,4-dinitrotoluene	39-139	38	39-139	50
2-chlorophenol	23-134	40	23-134	50
4-chloro-3-methylphenol	22-147	42	22-147	50
4-nitrophenol	3-132	50	3-139	50
acenaphthene	47-145	31	47-145	50
N-nitrosodipropylamine	2-230	38	2-230	50
pentachlorophenol	14-176	50	14-176	50
phenol	5-112	42	5-112	50
pyrene	52-115	31	52-115	50

All MS and MSD %R were within control limits except:

Sample	Analyte	MS %R	MSD %R	RPD
S6-MW01-GW2	1,2,4-trichlorobenzene	34.2	41	-
	2,4-dinitrotoluene	38.6	-	-
	acenaphthene	35.8	41.7	-
	pyrene	44.8	-	-
S2-MW01-GW2	phenol	-	38.5	64

- within acceptable control limits

Samples are not qualified based on MS/MSD results, alone, but in conjunction with the laboratory control sample (LCS). Since the laboratory control spike samples were within the quality control limits, the low recoveries noted above are judged to be sample matrix related and not due to difficulties in the laboratory procedures. No qualifications were applied since the low recoveries were not observed consistently between the MS and MSD implying the MS/MSD results may not be indicative of a low bias which may potentially affect other associated samples.

E.2.2.9 Laboratory Control Spikes/Laboratory Control Spike Duplicates

LCS/LCSDs are performed for every 10 samples analyzed to check the proficiency of the analysis. The data can determine if the MS/MSD is out of control, related to the system, or is a matrix effect. The LCS, in conjunction with the MS/MSD, is used to qualify data. All laboratory control spikes met the laboratory compliance criteria.

E.2.2.10 Internal Standards

Six internal standard (IS) compounds are used in SVOC analysis; each is associated with a group of analytes. The IS performance criteria ensures that GC/MS sensitivity and responses are stable during each analysis. The IS area counts must not vary more than a factor of two (-50% to + 100%) for the associated standard. The relative retention time of the IS must not vary more than ± 30 seconds from the relative retention time of the associated calibration standard. A review of raw data indicates that all internal standard met criteria.

E.2.2.11 Field Duplicates

Field duplicates are analyzed to determine the representativeness of the sampling procedure. Out of each duplicate pair, one is given a coded (false) identifier so that the laboratory results will not be biased. For aqueous samples, sample UANG-S2-MW03-GW2 is a field duplicate of UANG-S2-MW02-GW2 and sample UANG-S5-MW02-GW2 is a field duplicate of UANG-S5-MW01-GW2. Both duplicate pairs had no positive results. Sample UANG-BG-MW2(6-8) is a soil duplicate of UANG-B6MW2(4-6). Both samples had no positive results. No qualifications were made based on field duplicates.

E.2.3 TOTAL RECOVERABLE PETROLEUM HYDROCARBONS USING EPA METHOD 418.1

E.2.3.1 Introduction

The total recoverable petroleum hydrocarbons (TRPH) were analyzed using infrared (IR) spectroscopy. The concentrations were determined by direct comparison with standards. Twelve samples, including four soil and eight aqueous, were analyzed by USEPA Method 418.1. Quality data validation includes the assessment of technical holding times, calibrations, ICALs, CCALs, blanks, MS/MSDs, field duplicates and LCSs.

E.2.3.2 Technical Holding Time

The technical holding time for TRPH analysis is 28 days from the day of collection for water samples that are preserved and refrigerated. Holding times for water were not exceeded. No holding times are cited for soils. However, eight aqueous samples were not properly preserved. These samples were qualified "UJ" as estimated non-detects.

E.2.3.3 Initial Calibration

Instrument performance criteria are established to ensure that correct IR detection limits and wavelengths are set on the spectrophotometer. One calibration must be performed on the instrument every 24 hours or each time the instrument is set up. An ICAL curve is established using a series of six calibration standards of 80, 200, 400, 800, 2000 and 4000 µg/L. The resulting ICAL curve must have an r value greater than or equal to 0.995. All ICAL results met these requirements.

E.2.3.4 Continuing Calibration Verification

CCAL verification is performed after the ICAL at a frequency of one for every 10 samples. The CCAL %R must fall within the range of 85-115%. CCAL %Rs were within these limits for all samples.

E.2.3.5 Blanks

One laboratory method blank must be analyzed with every batch of 20 samples or at least one per day. Instrument blanks must be analyzed at a frequency of one for every 10 sample analyses and one after the last CCAL. Target analyte concentrations should not be found in any blank above the Contract Required Detection Limit (CRDL). No target analyte was detected in any of the laboratory blanks.

Field QC blanks were analyzed to verify that no contamination occurred during sampling. Two equipment rinseate blanks and two field blanks were analyzed for this fraction. No analyte contamination was detected.

E.2.3.6 Matrix Spike/Matrix Spike Duplicates

One MS or MSD must be included for every 10 samples (one MS/MSD pair per 20 samples) for each matrix analyzed. The MS %R results should fall in the range of 75-125% for both aqueous samples and soil samples for this fraction. The RPD results between the MS and MSD should be below 20%. One MS/MSD soil sample and one aqueous sample was associated with these samples. All matrix spike/matrix spike duplicate results met established criteria.

E.2.3.7 Laboratory Control Sample

Laboratory Control Samples (LCS) were run to monitor the overall performance of the analysis.

Qualifications of data are not made due to blank spike %R results alone. However, in conjunction with MS/MSD results, blank spikes are used to assess reproducibility and are used to qualify results only when the MS/MSD results are out of control limits. All LCS results were within the established criteria, (75.0 - 125%R).

E.2.3.8 Field Duplicates

Field duplicates are analyzed to determine the representativeness of the sampling procedures. One of each duplicate is given a coded (false) identifier so that the laboratory

will not bias the analytical results. Samples were not qualified due to duplicate results. One soil field duplicate was analyzed. All duplicate results were non-detect for TRPH.

E.2.4 PURGABLE HALOGENATED VOLATILE ORGANIC AND PURGABLE AROMATIC VOLATILE ORGANIC ANALYSES BY GC USING METHODS SW8010 AND SW8020

E.2.4.1 Introduction

Twenty-three field samples, (four soil samples and nineteen water samples), six trip blanks, two field blanks and three equipment rinseate blanks were analyzed for twenty-five target analytes, using Method SW8010 and nine target analytes using SW8020. Laboratory data was reviewed for technical holding times, ICALs, CCALs, laboratory blank and field blank contamination, surrogates, matrix spikes and matrix spike duplicates and laboratory control samples.

The following samples were re-sampled and re-analyzed due to positive detectable results in the original data but which had no second column confirmation performed in order to properly determine it's detection: UANG-S1-MW1-GW2, UANG-S1-MW2-GW2, UANG-S2-MW2-GW2, UANG-S2-MW1-GW2, UANG-S3-MW1-GW2 and associated field blanks UANG-RB2-GW2 and UANG-TB6-GW2.

E.2.4.2 Technical Holding Times

Holding times are measured from the time of sample collection to the time of analysis. The required holding times for EPA Methods 8010 and 8020, for both soil samples and water samples, is 14 days. All samples met the required holding times except:

Sample	Date of Sampling	Date of Analysis	Affected Analyte
UANG-S1-MW2-GW2	02-NOV-95	22-NOV-95	trichloroethene, tetrachloroethene, 1,2-dichloroethene
UANG-S2-MW2-GW2	02-NOV-95	22-NOV-95	trichloroethene, 1,2-dichloroethene
UANG-S2-MW1-GW2	02-NOV-95	22-NOV-95	trichloroethene, tetrachloroethene, 1,2-dichloroethene
UANG-S2-MW3-GW2	02-NOV-92	22-NOV-95	trichloroethene, 1,2-dichloroethene

The affected analytes had concentrations greater than the calibrated range. The samples were diluted and re-analyzed outside of the holding times for the affected analytes only. The results for these affected analytes noted above were qualified "J" as estimated values.

E.2.4.3 Initial Calibration

A five point initial calibration is performed for each compound at concentrations ranging from 0.50 µg/L to 50 µg/L. Linear regression method is used for sample quantitation. The linear regression correlation coefficient, (r), must be greater than or equal to 0.995. Twenty-nine results, affecting five samples, were qualified as estimated "U" or "UJ" due to an r value less than 0.995. In addition a qualification (estimated "J", "UJ") was applied if an analyte was being quantitated off a curve composed of less than five points. The analytical method requires a minimum of a five point calibration curve be analyzed.

An Initial Calibration Verification (ICV) standard was analyzed to verify the accuracy of the curve. The acceptance recovery range is 85%-115%. One or more analytes in each of the twenty-three field samples, six trip blanks, two field blanks and three rinse blanks required qualification due to ICV standard non-compliance affecting 139 results.

E.2.4.4 Continuing Calibration

A mid-range Continuing Calibration Verification (CCV) standard containing all the target compounds must be analyzed at the beginning of each 12-hour analysis or one per ten samples, whichever is more frequent. The CCAL was analyzed following the calibration of the instrument and prior to the analysis of any blanks or samples. The CCAL acceptance recovery range is 85%-115%. One or more analytes in each of the twenty-three field samples, six trip blanks, two field blanks and three rinse blanks required qualification due to CCV standard non-compliance, affecting 112 sample results.

E.2.4.5 Blanks

Blanks provide a measure of contamination that may have been introduced into a sample set during the field work, while samples were being collected or transported to the laboratory, or in the laboratory. If a blank is contaminated with a target compound at a concentration above the CRDL and the associated samples contain less than ten times the blank concentration of compounds considered to be common laboratory contaminants or less than five times the blank concentration for other target compounds, the analyte is qualified as undetected. However, if the detected analyte is greater than the CRDL yet below the action level for qualification employing the 5X or 10X rule, the result is reported non-detect "U" at the value observed. If a compound in a sample is greater than five or ten times the contamination of a compound found in an associated blank, no action was taken.

One laboratory method blank was analyzed for every ten samples and for each matrix type in every SDG. All laboratory method blanks were found to be free of analyte contamination except:

Blank	Analyte	Conc.	Affected Samples
PBLK-103470-1	chloromethane	2.9 µg/L	UANG-S1-MW1-GW2, UANG-S2-MW2-GW2, UANG-S2-MW3-GW2
	dichlorodifluoromethane	2.9 µg/L	
PBLK-103470-2	toluene	0.14 µg/L	None

Affected samples were qualified "U" as they contained less than five times the concentration found in the method blank.

Quality control field blanks analyzed for this fraction included equipment rinseate blanks, field blanks, and trip blanks. The following tables lists the field blanks and contamination found.

TABLE E.8
TRIP BLANK CONTAMINATION

	CONCENTRATION (µg/L)					
Analyte	**TB1**	**TB2**	**TB3**	**TB4**	**TB5**	**TB6**
1,2-dichloroethane	-	-	-	-	-	0.16
dichloromethane	0.71	-	-	-	-	0.92
trichloroethene	-	-	-	-	5.8	6.9
1,2-dichloroethane (total)	-	-	-	-	-	0.20
chlorobenzene	-	0.014	-	-	-	-

- no detectable level of analyte present

TABLE E.9
FIELD AND RINSE BLANK CONTAMINATION

	CONCENTRATION (μg/L)				
Analyte	**RB1**	**RB2**	**RB3**	**FB2**	**FB3**
benzene	-	0.12	-	-	-
toluene	-	1.3	-	-	-
o-xylene	-	0.23	-	-	-
1,4-dichlorobenzene	-	0.47	0.88	-	-
dichloromethane	0.78	-	-	-	-
toluene	2.0	-	2.7	0.083	-
chlorobenzene	-	-	-	0.13	-
bromodichloromethane	-	-	-	-	5.6
chloroform	-	-	-	-	20
trichloroethene	-	-	-	-	1.8
2-chloroethylvinylether	-	-	-	-	0.57
m/p xylene	-	-	0.29	-	-
styrene	-	-	2.8	-	-

- no detectable level of analyte present.

Samples were not affected by field blank contamination if they had non-detected results or results greater than five times (10 times for common lab contaminants) the contaminant concentration. The following is a list of samples affected by field blank contamination:

Blank	Analyte	Conc.	Affected Samples
TB02	chlorobenzene	0.14	UANG-S5-MW02-GW2, UANG-FB02-GW2
RB01	toluene	2.0	UANG-BGMW2(0-2)-GW2
TB5	trichloroethene	5.8	UANG-FB03-GW2
TB06	1,2-dichloroethane	0.16	UANG-S2-MW2-GW2 UANG-S2-MW3-GW2
	dichloromethane	0.92	UANG-S2-MW1-GW2
	trichloroethene	6.9	UANG-S1-MW1-GW2
RB02	benzene	0.12	UANG-S1-MW2-GW2, UANG-S3-MW1-GW2

The listed affected samples were qualified "U", as non-detect, as they contained less than five or ten times the blank value and were below the CRDL.

E.2.4.6 Surrogate Spikes

H-2.6-dichlorotoluene and H-chlorofluorobenzene were used as surrogates for method SW8010. Fluorobenzene, P-2,6-dichlorotoluene and P-chlorofluorobenzene were used as surrogates for Method SW8020. The QC limits were set by the laboratory and presented in the following table:

TABLE E.10
SURROGATE RECOVERY LIMITS

Compound	%R QC Limits	
	WATER	SOIL
H-2,6-dichlorotoluene	71.2-128%	46.1-142
H-chlorofluorobenzene	57.6-133%	39.1-139
fluorobenzene	85.6-119%	44.2-156
P-2,6-dichlorotoluene	88-123%	61.0-154
p-chlorofluorobenzene	81.5-113%	59.4-139

Samples were qualified, "J" or "UJ", if one or more surrogates for SW8010, or two or more surrogates for SW8020 were outside control limits. SW8010 compounds for 13 samples were qualified, and SW8020 compounds for one sample, (UANG-TB05-GW2) were qualified due to surrogate outliers.

E.2.4.7 Matrix Spike/Matrix Spike Duplicate

A matrix spike and matrix spike duplicate were run at a frequency of one pair per twenty samples. Data from MS/MSD are generated to determine the long term precision and accuracy of the analytical method for various matrices, and demonstrate acceptable compound recovery, by the laboratory, at the time of sample analysis. Qualification of field samples is not based on the results of the MS/MSD alone. The %R and RPD for the analytes used as the matrix spike compounds are presented in the following table:

TABLE E.11
DATA CHEM LABORATORY MS/MSD CRITERIA

COMPOUND	SOIL MS/MSD/RPD VALUES	WATER MS/MSD/RPD VALUES
benzene	0.744-192/12.7	79.2-106/6.34
ethyl benzene	36.6-147/16.3	81.6-116/5.97
chloroform	49.81-147/21.7	65.6-135/15.9
trichloroethene	31.3-136/15.6	47.1-132/16.1
tetrachloroethene	24.5-145/20.0	48.7-130/19.7
t-1,2-dichloroethene	50.7-111/23.3	49.3-122/16.2

Samples UANG-S6-MW01-GW2, UANG-S2-MW01-GW2, UANG-S1-MW1-GW2 and UANG-S3-MW1-GW2 were analyzed as water MS/MSDs. Sample UANG-BG-MW2(0-2)-GW2 was used as the soil MS/MSD. All MS/MSD QC compounds were compliant with established laboratory QC limits.

E.2.4.8 Laboratory Control Standard (LCS)

A LCS was run at a frequency of one for every ten samples. The LCS analysis serves as a monitor of the overall performance of all steps in the analysis, including sample preparation. It also serves as a control criteria to confirm matrix interferences. No action was taken based on LCS results, alone, but outliers are noted below. Data was only qualified as a result of the LCS if the MS/MSD %R is out of control. The %R, established by the laboratory, are presented on the following table:

TABLE E.12
DATA CHEM LABORATORY LCS CRITERIA

COMPOUND	SOIL LCS QC LIMITS	WATER LCS QC LIMITS
benzene	67.9-110	78.1-110
ethyl benzene	68.5-116	86.0-111
chloroform	57.8-137	71.4-127
tetrachloroethene	46.5-113	48.3-123
trichloroethene	43.4-114	60.0-111
t-1,2-dichloroethene	50.8-105	45.3-119

The following lists non-compliant LCS compounds:

LCS ID	Analyte	LCS %R	Action/Affected Samples
QC 997851	chloroform	67.2	None - MS/MSD compliant
	trans 1,2-dichloroethene	41.5	None - MS/MSD compliant
QC 98972	tetrachloroethene	114	None - MS/MSD compliant

E.2.4.9 Field Duplicates

Field duplicates are analyzed to determine the representativeness of the sampling procedure. Two aqueous sample pairs and one soil sample pair was analyzed as the field duplicate. UANG-S2-MW3-GW2 was a field duplicate of UANG-S2-MW2-GW2, UANG-S5-MW2-GW2 was a field duplicate of UANG-S5-MW1-GW2 and UANG-BGMW2(4-6) was a field duplicate of UANG-BGMW2(6-8). Analyte percent comparisons between the primary and duplicate samples were reviewed. All compounds were within ± 20% RPD for water duplicate pairs. All soil results were non-detect. Samples were not qualified due to duplicate results for either matrix.

E.2.4.10 Additional Comments

Several samples were qualified "J" due to a positive analytical response not being verified on the confirmation analysis. The following lists the sample and associated analytes:

Sample	Analyte
UANG-RB2-GW2	toluene
UANG-S2-MW1-GW2	1,2-dichlorobenzene, 1,1-dichloroethane trans 1,3-dichloropropene
UANG-S1-MW2-GW2	1,2-dichloroethane
UANG-S3-MW1-GW2	1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene

1,2-dichloroethene was reported as total and not split into the project requested cis-1,2-dichloroethene and trans 1,2-dichloroethene. The standard curve used the total compound response to quantitate data for 1,2-dichloroethene for the following samples: UANG-S1-MW01-GW2, UANG-S2-MW02-GW2, UANG-S2-MW01-GW2, UANG-S2-MW03-GW2, UANG-TB06-GW2. No further qualifications, beyond those previously mentioned were applied.

During the analytical process certain compounds exhibited a condition known as coeluting, whereby two or more compounds would combine to display one analytical peak. Samples which had a positive result and coeluting analytes, neither of which were confirmed by a second source, were re-sampled (refer to Section E.2.4.1). Compounds with a positive value, greater than the MDL but less than the CRDL which were also coelutions were flagged "J" as estimated values. No action was taken for coeluting analytes which were non-detected.

E.2.5 PESTICIDES AND PCB ANALYSIS USING EPA METHOD SW8080

E.2.5.1 Introduction

EPA Method SW8080 was used to analyze for pesticides and PCBs using dual column capillary gas chromatography with election capture detectors. A total of 12 samples were analyzed for 26 compounds, including four soil samples, four aqueous samples, two field blanks and two rinse blanks. Detected pesticide levels must be confirmed by analyzing the sample extracts on a second dissimilar column, however, no detectable PCB or Pesticide levels were found in any sample.

Soil samples were extracted using SW3550. Water samples were extracted using SW3510. Quality Control assessment of pesticides and PCBs included evaluation of technical holding times, Instrument Calibrations, ICALs, CCALs, method blanks, surrogate spike compounds, MS/MSD and LCSs. Instrument performance checks and pesticide clean-up check QC are not required deliverables for this project, and were not received.

E.2.5.2 Technical Holding Times

Technical holding times for pesticides and PCB analyses are seven days from sample collection to extraction for water samples, and 14 days from collection to extraction for soil/sediment samples. The maximum holding time between extraction and analysis is 40 days for both matrices. All samples met holding times.

E.2.5.3 Initial Calibration

Gas chromatograph (GC) calibration is established by injecting standard mixtures. These mixtures contain all the single component pesticides, PCBs (arochlors) and surrogates, at a minimum of five concentrations for each parameter of interest, and for each GC column used. Standards were prepared in concentrations of 2,5,10,50,10 and 200 μg/L. A criterion of greater than or equal to 0.995 was used for the r value, (correlation coefficient) of the initial calibration curve. This criterion was met during the initial calibration for all single component analytes. However, only one point calibration was performed for the multicomponent analytes toxaphene, chlordane and the arochlors. The results of these multicomponent analytes in the associated samples were considered estimated and flagged "UJ".

E.2.5.4 Continuing Calibration

An instrument blank and a standard at a 50 μg/L or 100 μg/L concentration are analyzed to bracket the front end of a 12-hour period during which samples are analyzed. The QC limits of %D between the calculated amount and the true amount of each of the pesticides and surrogates is ±15%.

One pesticide compound had a %D greater than the QC limits (endrin 82.2% D) on one of the two columns for which it was analyzed. This resulted in the qualification of sample UANG-BG-MW2(6-8) as estimated, "UJ".

E.2.5.5 Blanks

A method blank analysis must be performed for every 10 samples for each matrix type in every SDG. If concentrations of analytes in field samples are less than five times the contaminant concentration in the associated laboratory blanks, the results are qualified as "U". Contamination was not detected in any of the laboratory blanks for any analytes.

Field QC blanks are analyzed to verify that no contamination occurred during sampling. Field QC blanks analyzed for this fraction are equipment rinseate blanks and field blanks and qualify data using the same criteria as laboratory blanks. No analytes were detected in any field or rinse blank.

E.2.5.6 Surrogate Spike Compounds

Two surrogate spikes, tetrachloro-m-xylene (TCX) and dibutylchlorendate (DBC) are added to all samples to measure their recovery in sample and blank matrices. The laboratory limits for %R of the surrogates TCX and DBC are as follows:

TABLE E.13
PESTICIDE/PCB SURROGATE RECOVERIES

Surrogate	%R Water	%R Soil
tetrachloro-m-xylene	39-137	58.7-119
dibutylchlorendate	28.3-180	31.6-161

The surrogate recoveries in all samples met the QC limits.

E.2.5.7 Laboratory Control Samples (LCS)

LCS analysis serves as a monitor of the overall performance of all steps in the analysis, including the sample preparation. It also serves as a control to confirm matrix interferences in the instance where the MS/MSD are not within established control limits. The LCSs are used in conjunction with the additional QC samples analyzed to evaluate precision and accuracy. Four LCSs were prepared for the aqueous samples, and one for the soil sample. The %R criteria established by the laboratory are:

TABLE E.14

LCS/LCSD REQUIREMENTS FOR PESTICIDE ANALYSIS

Compound	Aqueous %R	Soils %R
aldrin	65.4-132	75-136
4,4'-DDT	55.7-113	57.8-141
dieldrin	67.9-138	71.2-145
endrin	79-153	77.7-166
heptachlor	64.5-143	66.7-145
lindane	70.9-133	68.6-133

All LCS samples were within the control criteria except endrin for QC-98977-1 (78.6%R). Professional judgment deemed that no action was required because MS/MSD endrin results for this batch were within accepted criteria and the recovery reported was less than 1% below the QC limit.

E.2.5.8 Matrix Spikes/Matrix Spike Duplicates

Data from MS/MSDs are generated to determine the long term precision and accuracy of the analytical method for various matrices, and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The MS/MSDs are used in conjunction with information or other deficiencies to evaluate precision and accuracy. One MS or MSD was run for each 10 samples (one MS/MSD pair per 20 samples). One soil sample and one water sample were analyzed as the MS/MSD pair. The %R and RPD criteria is presented below:

TABLE E.15

MS/MSD CRITERIA FOR PESTICIDE ANALYSIS

Compound	Water %R/RPD	Soil %R/RPD
aldrin	21.8-154/15/6	53.2-135/13.1
4,4'-DDT	17.9-128/16	25/160/34
dieldrin	39.5-159/12.8	38.6-158/13.5
endrin	60.5-173/14.2	45.7-192/17.7
heptachlor	34.5-160/13.5	53.3-145/13.7
lindane	60.4-134/12.7	48.7-139/13.7

UANG-RB03-GW2 was used as the aqueous MS/MSD. This rinse blank was labeled SXS 1314 by the lab, and may not have been identified to the lab as a field blank. All MS/MSD recoveries were within the specified QC limits. Yet the objective of the MS/MSD analysis is to determine both precision and accuracy of the laboratory based on the specific sample matrix which was not met in this case. It should be noted since a non-investigative sample was selected, the results doe not provide the site specific matrix information, therefore the MS/MSD results cannot be used to judge the associated water samples. No qualifications were applied.

UANG-BG-MW2(0-2) was used as the soil MS/MSD. All analyte recoveries were within the specified QC limits.

E.2.5.9 Coded Field Duplicates

Field duplicates are analyzed to determine the representativeness of the sampling procedures. One of each duplicate pair is given a coded (false) identifier so that the laboratory will not bias the analytical results. One field duplicate pair was analyzed with this fraction, UANG-BGMW2(6-8) is a soil duplicate of UANG-BE-MW2(4-6). No analytes were found at detectable levels. Samples were not qualified based on field duplicate results.

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-RB03-GW2			UANG-S2-MW02-GW2			UANG-S2-MW03-GW2			UANG-S2-MW01-GW2		
LAB ID	SXS 01314			SXS 01315			SXS 01316			SXS 01317		
DATE COLLECTED	28-Aug-95			28-Aug-95			28-Aug-95			28-Aug-95		
SAMPLE MATRIX	Water			Water			Water			Water		
SEMI-VOLATILE	**CONCENTRATION**			**CONCENTRATION**			**CONCENTRATION**			**CONCENTRATION**		
COMPOUNDS 8270	**(ug/l)**	**Q**	**C**	**(ug/l)**	**Q**	**C**	**(ug/l)**	**Q**	**C**	**(ug/l)**	**Q**	**C**
2,4-Dinitrophenol	50	UJ	B	50	UJ	B	50	UJ	B	50	UJ	B
Di-n-butyl-phthalate	---			10	U	E	10	U	E	10	U	E
TPH	100	UJ	I	---			---			---		
VOLATILE COMPOUNDS 8010/8020												
1,1,1,2-Tetrachloroethane	0.50	UJ	J	---			---			---		
1,1,2,2-Tetrachloroethane	0.50	UJ	J	---			---			---		
1,1,2-Trichloroethane	0.50	UJ	J	---			---			---		
1,1-Dichloroethane	0.50	UJ	J	---			---			---		
1,1-Dichloroethene	0.50	UJ	C,J	---			---			---		
1,2-Dichloroethane	0.50	UJ	J,L	---			---			---		
1,2-Dichloropropane	0.50	UJ	J	---			---			---		
2-Chloroethyl Vinyl Ether	0.50	UJ	B,J	---			---			---		
Bromodichloromethane	0.50	UJ	J	---			---			---		
Bromoform	0.50	UJ	J	---			---			---		
Bromomethane	2.0	UJ	B,C,J,L	---			---			---		
Carbon Tetrachloride	0.50	UJ	J	---			---			---		
Chloroethane	0.50	UJ	J	---			---			---		
Chloroform	0.50	UJ	J	---			---			---		
Chloromethane	0.50	UJ	,C,J,L,	---			---			---		
Cis-1,2-Dichloroethene	0.50	UJ	J	---			---			---		
Dibromochloromethane	0.50	UJ	J	---			---			---		
Dichlorodifluoromethane	0.50	UJ	,C,J,L,	---			---			---		
Dichloromethane	0.50	UJ	J	---			---			---		
M-xylene + P-xylene	0.29	J	A,J,M	---			---			---		
Tetrachloroethene	0.50	UJ	J	---			---			---		
Trans-1,2-Dichloroethene	0.50	UJ	J	---			---			---		
Trans-1,3-Dichloropropene	0.50	UJ	J	---			---			---		
Trichloroethene	0.50	UJ	C,J	---			---			---		
Trichlorofluoromethane	0.50	UJ	J	---			---			---		
Vinyl Chloride	0.50	UJ	B,C,J,L	---			---			---		
METALS												
Arsenic	2.0	UJ	H	---			6.9	J	H	---		
Chromium	---			4.4	U	P	3.8	U	P	5.1	U	P
Lead	1.4	UJ	E,H	3.5	UJ	D,E,F,H	3.9	UJ	D,E,F,H	4.8	UJ	D,E,F,H
Mercury	0.02	UJ	E	0.049	J	E	0.056	J	E	0.02	UJ	E
Selenium	16	J	A,H	12	UJ	H	---			12	UJ	H
Thallium	1.2	UJ	H	1.2	UJ	D,F	1.2	UJ	D,F,H	1.2	UJ	D,F,H
Zinc	15	U	E,P	13	U	E,P	8.9	U	E,P	22	U	P
PESTICIDES/PCBs												
Aroclor 1016	1.0	UJ	B	---			---			---		
Aroclor 1221	1.0	UJ	B	---			---			---		
Aroclor 1232	1.0	UJ	B	---			---			---		
Aroclor 1242	1.0	UJ	B	---			---			---		
Aroclor 1248	1.0	UJ	B	---			---			---		
Aroclor 1254	1.0	UJ	B	---			---			---		
Aroclor 1260	1.0	UJ	B	---			---			---		
Chlordane	0.10	UJ	B	---			---			---		
Toxaphene	2.0	UJ	B	---			---			---		

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-BG-MW01-GW2			UANG-FB03-GW2			UANG-TB05-GW2		
LAB ID	SXS 01318			SXS 01319			SXS 01320		
DATE COLLECTED	28-Aug-95			28-Aug-95			28-Aug-95		
SAMPLE MATRIX	Water			Water			Water		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**
2,4-Dinitrophenol	50	UJ	B	50	UJ	B	---		
Di-n-butyl-phthalate	---			10	U	E	---		
TPH	100	UJ	I	100	UJ	I	---		
VOLATILE COMPOUNDS 8010/8020									
1,1,1,2-Tetrachloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
1,1,2,2-Tetrachloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
1,1,2-Trichloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
1,1-Dichloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
1,1-Dichloroethene	0.50	UJ	C,J	0.50	UJ	C,J	0.50	UJ	C,J
1,2-Dichlorobenzene	---			---			0.50	UJ	J
1,2-Dichloroethane	0.50	UJ	J,L	0.50	UJ	J,L	0.50	UJ	J,L
1,2-Dichloropropane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
1,3-Dichlorobenzene	---			---			0.50	UJ	J
1,4-Dichlorobenzene	---			---			0.50	UJ	J
2-Chloroethyl Vinyl Ether	0.50	UJ	B,J	0.57	UJ	B,J	0.50	UJ	B,J
Benzene	---			---			0.50	UJ	J
Bromodichloromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Bromoform	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Bromomethane	2.0	UJ	B,C,J,L	2.0	UJ	B,C,J,L	2.0	UJ	B,C,J,L
Carbon Tetrachloride	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Chlorobenzene	---			---			0.50	UJ	J
Chloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Chloroform	0.50	UJ	J	20	J	J	0.50	UJ	J
Chloromethane	0.50	UJ	,C,J,L,	0.50	UJ	,C,J,L,	0.50	UJ	,C,J,L,Q
Cis-1,2-Dichloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Dibromochloromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Dichlorodifluoromethane	0.50	UJ	,C,J,L,	0.50	UJ	,C,J,L,	0.50	UJ	,C,J,L,Q
Dichloromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Ethyl benzene	---			---			0.50	UJ	J
M-xylene + P-xylene	---			---			---		
O-xylene	---			---			0.50	UJ	J
Styrene	---			---			0.50	UJ	J
Tetrachloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Toluene	---			---			0.50	UJ	J
Trans-1,2-Dichloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Trans-1,3-Dichloropropene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Trichloroethene	0.50	UJ	J	1.8	U	P	5.8	J	J
Trichlorofluoromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J
Vinyl Chloride	0.50	UJ	B,C,J,L	0.50	UJ	B,C,J,L	0.50	UJ	B,C,J,L
METALS									
Antimony	---			33	U	O	---		
Arsenic	---			2.0	UJ	H	---		
Chromium	5.0	U	P	---			---		
Lead	4.8	UJ	D,E,F	2.1	UJ	E,H	---		
Mercury	0.024	J	E	0.02	UJ	E	---		
Selenium	12	UJ	H	12	J	H	---		
Thallium	1.2	UJ	D,F,H	1.2	UJ	H	---		
Zinc	4.1	U	E,P	---			---		
PESTICIDES/PCBs									
Aroclor 1016	1.0	UJ	B	1.0	UJ	B	---		
Aroclor 1221	1.0	UJ	B	1.0	UJ	B	---		
Aroclor 1232	1.0	UJ	B	1.0	UJ	B	---		
Aroclor 1242	1.0	UJ	B	1.0	UJ	B	---		
Aroclor 1248	1.0	UJ	B	1.0	UJ	B	---		
Aroclor 1254	1.0	UJ	B	1.0	UJ	B	---		
Aroclor 1260	1.0	UJ	B	1.0	UJ	B	---		
Chlordane	0.10	UJ	B	0.10	UJ	B	---		
Toxaphene	2.0	UJ	B	2.0	UJ	B	---		

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-RB1-GW2			UANG-BG-MW2 (0-2)			UANG-BG-MW2 (2-4)			UANG-BG-MW2 (4-6)		
LAB ID	SXS 01260			SXS 01256			SXS 01257			SXS 01258		
DATE COLLECTED	16-Aug-95			16-Aug-95			16-Aug-95			16-Aug-95		
SAMPLE MATRIX	Water			Soil			Soil			Soil		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/kg)**	**Q**	**C**	**CONCENTRATION (ug/kg)**	**Q**	**C**	**CONCENTRATION (ug/kg)**	**Q**	**C**
2-Nitroaniline	50	UJ	C	3300	UJ	C	3300	UJ	C	3300	UJ	C
3-Nitroaniline	50	UJ	C	---			---			---		
4-Nitroaniline	50	UJ	C	---			---			---		
4-Nitrophenol	50	UJ	C	---			---			---		
Benzoic acid	50	UJ	B,C	3300	UJ	B	3300	UJ	B	3300	UJ	B
Bis(2-chloroethyl)ether	10	UJ	C	---			---			---		
Bis(2-chloroisopropyl)ether	10	UJ	C	660	UJ	C	660	UJ	C	660	UJ	C
N-nitroso-di-n-propylamine	10	UJ	C	---			---			---		
TPH	100	UJ	I	---			---			---		
VOLATILE COMPOUNDS 8010/8020												
1,1,1,2-Tetrachloroethane	---			0.62	UJ	J	---			---		
1,1,1-Trichloroethane	---			0.62	UJ	J	---			---		
1,1,2,2-Tetrachloroethane	0.50	UJ	B,C,L	0.62	UJ	B,C,J,L	0.60	UJ	B,C,L	0.61	UJ	B,C,L
1,1,2-Trichloroethane	---			0.62	UJ	J	---			---		
1,1-Dichloroethane	---			0.62	UJ	J	---			---		
1,1-Dichloroethene	---			0.62	UJ	J	---			---		
1,2-Dichloroethane	---			0.62	UJ	J	---			---		
1,2-Dichloropropane	---			0.62	UJ	J	---			---		
1,3-Dichlorobenzene	---			0.62	UJ	J	---			---		
2-Chloroethyl Vinyl Ether	0.50	UJ	B	0.62	UJ	B,J	0.60	UJ	B	0.61	UJ	B
Bromodichloromethane	---			0.62	UJ	J	---			---		
Bromoform	---			0.62	UJ	J	---			---		
Bromomethane	2.0	UJ	C,L	2.5	UJ	C,J,L	2.4	UJ	C,L	2.4	UJ	C,L
Carbon Tetrachloride	---			0.62	UJ	J	---			---		
Chloroethane	0.50	UJ	B,L	0.62	UJ	B,J,L	0.60	UJ	B,L	0.61	UJ	B,L
Chloroform	---			0.62	UJ	J	---			---		
Chloromethane	0.50	UJ	B,C,L	0.62	UJ	B,C,J,L	0.60	UJ	B,C,L	0.61	UJ	B,C,L
Cis-1,2-Dichloroethene	---			0.62	UJ	J	---			---		
Dibromochloromethane	---			0.62	UJ	J	---			---		
Dichlorodifluoromethane	0.50	UJ	B,C,L	0.62	UJ	B,C,J,L	0.60	UJ	B,C,L	0.61	UJ	B,C,L
Dichloromethane	---			0.62	UJ	J	---			---		
Tetrachloroethene	0.50	UJ	C	0.62	UJ	C,J	0.60	UJ	C	0.61	UJ	C
Toluene	---			0.62	UJ	J,P	---			---		
Trans-1,2-Dichloroethene	---			0.62	UJ	J	---			---		
Trans-1,3-Dichloropropene	---			0.62	UJ	J	---			---		
Trichloroethene	---			0.62	UJ	J	---			---		
Trichlorofluoromethane	0.50	UJ	B,C	0.62	UJ	B,C,J	0.60	UJ	B,C	0.61	UJ	B,C
Vinyl Chloride	0.50	UJ	B,C,L	0.62	UJ	B,C,J,L	0.60	UJ	B,C,L	0.61	UJ	B,C,L
METALS												
Arsenic	2.0	UJ	H	4100	J	D,F	3700	J	D,F	11000	J	D,F
Cadmium	0.97	UJ	E	---			---			---		
Chromium	---			14000	U	P	11000	U	P	12000	U	P
Copper	3.1	U	E,O	21000	J	G	21000	J	G	26000	J	G
Lead	---			14000	J	D	9800	J	D	11000	J	D
Mercury	0.019	UJ	E,O	---			---			---		
Nickel	---			9500	U	P	6900	U	P	8900	U	P
Selenium	---			---			---			---		
Thallium	---			310	J	A	200	J	A	210	J	A
PESTICIDES/PCBs												
Aroclor 1016	1.0	UJ	B	41	UJ	B	39	UJ	B	41	UJ	B
Aroclor 1221	1.0	UJ	B	83	UJ	B	80	UJ	B	83	UJ	B
Aroclor 1232	1.0	UJ	B	41	UJ	B	39	UJ	B	41	UJ	B
Aroclor 1242	1.0	UJ	B	41	UJ	B	39	UJ	B	41	UJ	B
Aroclor 1248	1.0	UJ	B	41	UJ	B	39	UJ	B	41	UJ	B
Aroclor 1254	1.0	UJ	B	41	UJ	B	39	UJ	B	41	UJ	B
Aroclor 1260	1.0	UJ	B	41	UJ	B	39	UJ	B	41	UJ	B
Chlordane	0.10	UJ	B	21	UJ	B	20	UJ	B	21	UJ	B
Toxaphene	2.0	UJ	B	210	UJ	B	200	UJ	B	210	UJ	B

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID LAB ID DATE COLLECTED SAMPLE MATRIX	UANG-BG-MW2 (6-8) SXS 01259 16-Aug-95 Soil			UANG-TB1-GW2 SXS 01261 16-Aug-95 Soil		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/kg)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**
2-Nitroaniline	3300	UJ	C	---		
Benzoic acid	3300	UJ	B	---		
Bis(2-chloroisopropyl)ether	660	UJ	C	---		
VOLATILE COMPOUNDS 8010/8020						
1,1,2,2-Tetrachloroethane	0.62	UJ	B,C,L	0.50	UJ	B,C,L
2-Chloroethyl Vinyl Ether	0.62	UJ	B	0.50	UJ	B
Bromomethane	2.5	UJ	C,L	2.0	UJ	C,L
Chloroethane	0.62	UJ	B,L	0.50	UJ	B,L
Chloromethane	0.62	UJ	B,C,L	0.50	UJ	B,C,L
Dichlorodifluoromethane	0.62	UJ	B,C,L	0.50	UJ	B,C,L
Tetrachloroethene	0.62	UJ	C	0.50	UJ	C
Trichlorofluoromethane	0.62	UJ	B,C	0.50	UJ	B,C
Vinyl Chloride	0.62	UJ	B,C,L	0.50	UJ	B,C,L
METALS						
Antimony	---			---		
Arsenic	8400	J	D,F	---		
Cadmium	---			---		
Chromium	12000	U	P	---		
Copper	26000	J	G	---		
Lead	9800	J	D	---		
Mercury	---			---		
Nickel	7500	U	P	---		
Selenium	---			---		
Thallium	---			---		
PESTICIDES/PCBs						
Aroclor 1016	41	UJ	B	---		
Aroclor 1221	83	UJ	B	---		
Aroclor 1232	41	UJ	B	---		
Aroclor 1242	41	UJ	B	---		
Aroclor 1248	41	UJ	B	---		
Aroclor 1254	41	UJ	B	---		
Aroclor 1260	41	UJ	B	---		
Chlordane	21	UJ	B	---		
Endrin	21	UJ	C	---		
Toxaphene	210	UJ	B	---		

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID LAB ID DATE COLLECTED SAMPLE MATRIX	UANG-S7-MW02-GW2 SXS 01262 22-Aug-95 Water			UANG-S7-MW01-GW2 SXS 01263 22-Aug-95 Water			UANG-S4-MW01-GW2 SXS 01264 22-Aug-95 Water			UANG-S5-MW01-GW2 SXS 01265 22-Aug-95 Water		
SEMI-VOLATILE	**CONCENTRATION**			**CONCENTRATION**			**CONCENTRATION**			**CONCENTRATION**		
COMPOUNDS 8270	**(ug/l)**	**Q**	**C**	**(ug/l)**	**Q**	**C**	**(ug/l)**	**Q**	**C**	**(ug/l)**	**Q**	**C**
2-Nitroaniline	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
3-Nitroaniline	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
4-Nitroaniline	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
4-Nitrophenol	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
Benzoic acid	50	UJ	B,C	50	UJ	B,C	50	UJ	B,C	50	UJ	B,C
Bis(2-chloroethyl)ether	10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
Bis(2-chloroisopropyl)ether	10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
N-nitroso-di-n-propylamine	10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
TPH	100	UJ	I	100	UJ	I	---			---		
VOLATILE COMPOUNDS 8010/8020												
1,1,1,2-Tetrachloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
1,1,1-Trichloroethane	0.50	UJ	B,J	0.50	UJ	B,J	0.50	UJ	B,J	0.50	UJ	B
1,1,2,2-Tetrachloroethane	1.0	UJ	J	1.0	UJ	J	1.0	UJ	J	---		
1,1,2-Trichloroethane	0.50	UJ	C,J	0.50	UJ	C,J	0.50	UJ	C,J	0.50	UJ	C
1,1-Dichloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
1,1-Dichloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
1,2-Dichloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
1,2-Dichloropropane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
1,3-Dichlorobenzene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
2-Chloroethyl Vinyl Ether	0.50	UJ	B,J	0.50	UJ	B,J	0.50	UJ	B,J	0.50	UJ	B
Bromodichloromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Bromoform	0.50	UJ	C,J	0.50	UJ	C,J	0.50	UJ	C,J	0.50	UJ	C
Bromomethane	2.0	UJ	B,J	2.0	UJ	B,J	2.0	UJ	B,J	2.0	UJ	B
Carbon Tetrachloride	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Chloroethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Chloroform	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Chloromethane	1.0	UJ	J	1.0	UJ	J	1.0	UJ	J	---		
Cis-1,2-Dichloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Dibromochloromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Dichlorodifluoromethane	1.0	UJ	J	1.0	UJ	J	1.0	UJ	J	---		
Dichloromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Tetrachloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Trans-1,2-Dichloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Trans-1,3-Dichloropropene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Trichloroethene	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Trichlorofluoromethane	0.50	UJ	J	0.50	UJ	J	0.50	UJ	J	---		
Vinyl Chloride	0.50	UJ	B,J	0.50	UJ	B,J	0.50	UJ	B,J	0.50	UJ	B
METALS												
Antimony	---			---			44	U	O	---		
Arsenic	---			---			---			2.0	UJ	H
Lead	1.80	UJ	D,E,F	0.88	UJ	D,F	1.5	UJ	D,E,F	---		
Mercury	0.02	UJ	E	0.038	J	E	0.02	UJ	E	---		
Thallium	1.2	UJ	D,F	1.2	UJ	D,F	1.2	UJ	D,F	---		
Zinc	6.8	U	E	---			---			---		

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID LAB ID DATE COLLECTED SAMPLE MATRIX	UANG-FB02-GW2 SXS 01267 22-Aug-95 Water			UANG-S5-MW02-GW2 SXS 01268 22-Aug-95 Water			UANG-TB02-GW2 SXS 01266 22-Aug-95 Water		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**
2-Nitroaniline	50	UJ	C	50	UJ	C	---		
3-Nitroaniline	50	UJ	C	50	UJ	C	---		
4-Nitroaniline	50	UJ	C	50	UJ	C	---		
4-Nitrophenol	50	UJ	C	50	UJ	C	---		
Benzoic acid	50	UJ	B,C	50	UJ	B,C	---		
Bis(2-chloroethyl)ether	10	UJ	C	10	UJ	C	---		
Bis(2-chloroisopropyl)ether	10	UJ	C	10	UJ	C	---		
N-nitroso-di-n-propylamine	10	UJ	C	10	UJ	C	---		
TPH	100	UJ	I	---			---		
VOLATILE COMPOUNDS 8010/8020									
1,1,1,2-Tetrachloroethane	---			0.50	UJ	J	---		
1,1,1-Trichloroethane	0.50	UJ	B	0.50	UJ	B,J	0.50	UJ	B
1,1,2,2-Tetrachloroethane	---			1.0	UJ	J	---		
1,1,2-Trichloroethane	0.50	UJ	C	0.50	UJ	C,J	0.50	UJ	C
1,1-Dichloroethane	---			0.50	UJ	J	---		
1,1-Dichloroethene	---			0.50	UJ	J	---		
1,2-Dichloroethane	---			0.50	UJ	J	---		
1,2-Dichloropropane	---			0.50	UJ	J	---		
1,3-Dichlorobenzene	---			0.50	UJ	J	---		
2-Chloroethyl Vinyl Ether	0.50	UJ	B	0.50	UJ	B,J	0.50	UJ	B
Bromodichloromethane	---			0.50	UJ	J	---		
Bromoform	0.50	UJ	C	0.50	UJ	C,J	0.50	UJ	C
Bromomethane	2.0	UJ	B	2.0	UJ	B,J	2.0	UJ	B
Carbon Tetrachloride	---			0.50	UJ	J	---		
Chlorobenzene	0.50	UJ	P	0.50	UJ	J,P	---		
Chloroethane	---			0.50	UJ	J	---		
Chloroform	---			0.50	UJ	J	---		
Chloromethane	---			1.0	UJ	J	---		
Cis-1,2-Dichloroethene	---			0.50	UJ	J	---		
Dibromochloromethane	---			0.50	UJ	J	---		
Dichlorodifluoromethane	---			1.0	UJ	J	---		
Dichloromethane	---			0.50	UJ	J	---		
Tetrachloroethene	---			0.50	UJ	J	---		
Trans-1,2-Dichloroethene	---			0.50	UJ	J	---		
Trans-1,3-Dichloropropene	---			0.50	UJ	J	---		
Trichloroethene	---			0.50	UJ	J	---		
Trichlorofluoromethane	---			0.50	UJ	J	---		
Vinyl Chloride	0.50	UJ	B	0.50	UJ	B,J	0.50	UJ	B
METALS									
Arsenic	2.0	UJ	H	6.6	J	H	---		
Mercury	0.02	UJ	E	---			---		
Zinc	5.3	U	E	---			---		
PESTICIDES/PCBs									
Aroclor 1016	1.0	UJ	B	---			---		
Aroclor 1221	1.0	UJ	B	---			---		
Aroclor 1232	1.0	UJ	B	---			---		
Aroclor 1242	1.0	UJ	B	---			---		
Aroclor 1248	1.0	UJ	B	---			---		
Aroclor 1254	1.0	UJ	B	---			---		
Aroclor 1260	1.0	UJ	B	---			---		
Chlordane	0.10	UJ	B	---			---		
Toxaphene	2.0	UJ	B	---			---		

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-S3-MW01-GW2			UANG-S3-MW02-GW2			UANG-BG-MW02-GW2		
LAB ID	SXS 01277			SXS 01278			SXS 01279		
DATE COLLECTED	25-Aug-95			25-Aug-95			25-Aug-95		
SAMPLE MATRIX	Water			Water			Water		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**
1,4-Dichlorobenzene	3.3	J	A	—			—		
2,4-Dinitrophenol	50	UJ	B,C	50	UJ	B,C	50	UJ	B,C
4,6-Dinitro-2-methyl phenol	50	UJ	C	50	UJ	C	50	UJ	C
Benzoic acid	50	UJ	C	50	UJ	C	50	UJ	C
Di-n-butylphthalate	10	U	E	10	U	E	10	U	E
TPH	—			—			100	UJ	I
VOLATILE COMPOUNDS 8010/8020									
1,1,1-Trichloroethane	—			0.50	UJ	B	0.50	UJ	B
1,1,2-Trichloroethane	—			0.50	UJ	C	0.50	UJ	C
2-Chloroethyl Vinyl Ether	—			0.50	UJ	B	0.50	UJ	B
Bromoform	—			0.50	UJ	C	0.50	UJ	C
Bromomethane	—			2.0	UJ	B	2.0	UJ	B
Vinyl Chloride	—			0.50	UJ	B	0.50	UJ	B
METALS									
Antimony	—			—			60	UJ	D,F
Arsenic	7.1	J	H	5.3	J	H	2.0	UJ	F,H
Beryllium	—			—			0.63	UJ	F
Cadmium	—			—			0.97	UJ	E,F
Chromium	—			—			3.6	UJ	F
Copper	—			—			12	UJ	E,F,O
Lead	—			—			4.4	UJ	D,F
Mercury	—			—			0.02	UJ	E,F,O
Nickel	—			—			11	UJ	F
Selenium	—			—			60	UJ	F,H
Silver	—			—			5.5	UJ	F
Thallium	—			—			1.2	UJ	D,F
Zinc	—			—			3.6	UJ	F
PESTICIDES/PCBs									
Aroclor 1016	—			—			1.0	UJ	B
Aroclor 1221	—			—			1.0	UJ	B
Aroclor 1232	—			—			1.0	UJ	B
Aroclor 1242	—			—			1.0	UJ	B
Aroclor 1248	—			—			1.0	UJ	B
Aroclor 1254	—			—			1.0	UJ	B
Aroclor 1260	—			—			1.0	UJ	B
Chlordane	—			—			0.10	UJ	B
Toxaphene	—			—			2.0	UJ	B

FIELD ID	UANG-TB04-GW2		
LAB ID	SXS 01282		
DATE COLLECTED	25-Aug-95		
SAMPLE MATRIX	Water		
VOLATILE COMPOUNDS 8010/8020	**CONCENTRATION (ug/l)**	**Q**	**C**
1,1,1-Trichloroethane	0.50	UJ	B
1,1,2-Trichloroethane	0.50	UJ	C
2-Chloroethyl Vinyl Ether	0.50	UJ	B
Bromoform	0.50	UJ	C
Bromomethane	2.0	UJ	B
Vinyl Chloride	0.50	UJ	B

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-S6-MW02-GW2			UANG-S6-MW03-GW2			UANG-S6-MW04-GW2			UANG-S6-MW05-GW2		
LAB ID	SXS 01272			SXS 01273			SXS 01274			SXS 01275		
DATE COLLECTED	24-Aug-95			24-Aug-95			24-Aug-95			24-Aug-95		
SAMPLE MATRIX	Water			Water			Water			Water		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**	**CONCENTRATION (ug/l)**	**Q**	**C**
2-Nitroaniline	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
Benzoic acid	50	UJ	B	50	UJ	B	50	UJ	B	50	UJ	B
Bis(2-chloroisopropyl)ether	10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
VOLATILE COMPOUNDS 8010/8020												
1,1,1,2-Tetrachloroethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
1,1,1-Trichloroethane	0.50	UJ	B,J	0.50	UJ	B	0.50	UJ	B,J	0.50	UJ	B,J
1,1,2,2-Tetrachloroethane	1.0	UJ	J	---			1.0	UJ	J	1.0	UJ	J
1,1,2-Trichloroethane	0.50	UJ	C,J	0.50	UJ	C	0.50	UJ	C,J	0.50	UJ	C,J
1,1-Dichloroethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
1,1-Dichloroethene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
1,2-Dichloroethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
1,2-Dichloropropane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
1,3-Dichlorobenzene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
2-Chloroethyl Vinyl Ether	0.50	UJ	B,J	0.50	UJ	B	0.50	UJ	B,J	0.50	UJ	B,J
Bromodichloromethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Bromoform	0.50	UJ	C,J	0.50	UJ	C	0.50	UJ	C,J	0.50	UJ	C,J
Bromomethane	2.0	UJ	B,J	2.0	UJ	B	2.0	UJ	B,J	2.0	UJ	B,J
Carbon Tetrachloride	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Chloroethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Chloroform	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Chloromethane	1.0	UJ	J	---			1.0	UJ	J	1.0	UJ	J
Cis-1,2-Dichloroethene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Dibromochloromethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Dichlorodifluoromethane	1.0	UJ	J	---			1.0	UJ	J	1.0	UJ	J
Dichloromethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
M-xylene + P-xylene	---			0.33	J	Q	---			---		
Tetrachloroethene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Trans-1,2-Dichloroethene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Trans-1,3-Dichloropropene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Trichloroethene	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Trichlorofluoromethane	0.50	UJ	J	---			0.50	UJ	J	0.50	UJ	J
Vinyl Chloride	0.50	UJ	B,J	0.50	UJ	B	0.50	UJ	B,J	0.50	UJ	B,J
METALS												
Arsenic	45	J	F	140	J	F,H	91	J	F,H	340	J	H

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-S6-MW01-GW2		
LAB ID	SXS MW01-GW2		
DATE COLLECTED	24-Aug-95		
SAMPLE MATRIX	Water		
SEMI-VOLATILE	CONCENTRATION		
COMPOUNDS 8270	(ug/l)	Q	C
1,2,4-Trichlorobenzene	10	UJ	J
1,2-Dichlorobenzene	10	UJ	J
1,3-Dichlorobenzene	10	UJ	J
1,4-Dichlorobenzene	10	UJ	J
2,4-Dichlorophenol	10	UJ	J
2,4-Dinitrotoluene	10	UJ	J
2,6-Dinitrotoluene	10	UJ	J
2-Chloronaphthalene	10	UJ	J
2-Methylnaphthalene	10	UJ	J
2-Nitroaniline	50	UJ	C,J
3,3-Dichlorobenzidine	20	UJ	J
3-Nitroaniline	50	UJ	J
4,6-Dinitro-2-methyl phenol	50	UJ	J
4-Bromophenyl phenyl ether	10	UJ	J
4-Chloroaniline	20	UJ	J
4-Chlorophenyl phenyl ether	10	UJ	J
4-Nitroaniline	50	UJ	J
Acenaphthene	10	UJ	J
Acenaphthylene	10	UJ	J
Anthracene	10	UJ	J
Benzo (a) anthracene	10	UJ	J
Benzo (a) pyrene	10	UJ	J
Benzo (b) fluoranthene	10	UJ	J
Benzo (ghi) perylene	10	UJ	J
Benzo (k) fluoranthene	10	UJ	J
Benzoic acid	50	UJ	B,J
Bis (2-chloroethoxy) methane	10	UJ	J
Bis (2-chloroethyl) ether	10	UJ	C,J
Bis (2-chloroisopropyl) ether	10	UJ	J
Bis (2-ethylhexyl) phthalate	10	UJ	J
Butylbenzylphthalate	10	UJ	J
Chrysene	10	UJ	J
Di-n-butylphthalate	10	UJ	J
Di-n-octylphthalate	10	UJ	J
Dibenz (a,h) anthracene	10	UJ	J
Dibenzofuran	10	UJ	J
Diethylphthalate	10	UJ	J
Dimethylphthalate	10	UJ	J
Fluoranthene	10	UJ	J
Fluorene	10	UJ	J
Hexachlorobenzene	10	UJ	J
Hexachlorobutadiene	10	UJ	J
Hexachlorocyclopentadiene	10	UJ	J

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	NG-S6-MW01-GW2 (cont.)		
LAB ID	SXS MW01-GW2		
DATE COLLECTED	24-Aug-95		
SAMPLE MATRIX	Water		
SEMI-VOLATILE COMPOUNDS 8270	**CONCENTRATION (ug/l)**	**Q**	**C**
Hexachloroethane	10	UJ	J
Indeno (1,2,3-cd) pyrene	10	UJ	J
Isophorone	10	UJ	J
N-nitroso-di-n-propylamine	10	UJ	J
N-nitroso-dimethylamine	10	UJ	J
N-nitrosodiphenylamine	10	UJ	J
Naphthalene	10	UJ	J
Nitrobenzene	10	UJ	J
Phenanthrene	10	UJ	J
Pyrene	10	UJ	J
VOLATILE COMPOUNDS 8010/8020			
1,1,1,2-Tetrachloroethane	0.50	UJ	J
1,1,1-Trichloroethane	0.50	UJ	B,J
1,1,2,2-Tetrachloroethane	1.0	UJ	J
1,1,2-Trichloroethane	0.50	UJ	C,J
1,1-Dichloroethane	0.50	UJ	J
1,1-Dichloroethene	0.50	UJ	J
1,2-Dichloroethane	0.50	UJ	J
1,2-Dichloropropane	0.50	UJ	J
1,3-Dichlorobenzene	0.50	UJ	J
2-Chloroethyl Vinyl Ether	0.50	UJ	B,J
Bromodichloromethane	0.50	UJ	J
Bromoform	0.50	UJ	C,J
Bromomethane	2.0	UJ	B,J
Carbon Tetrachloride	0.50	UJ	J
Chloroethane	0.50	UJ	J
Chloroform	0.50	UJ	J
Chloromethane	1.0	UJ	J
Cis-1,2-Dichloroethene	0.50	UJ	J
Dibromochloromethane	0.50	UJ	J
Dichlorodifluoromethane	1.0	UJ	J
Dichloromethane	0.50	UJ	J
Tetrachloroethene	0.50	UJ	J
Trans-1,2-Dichloroethene	0.50	UJ	J
Trans-1,3-Dichloropropene	0.50	UJ	J
Trichloroethene	0.50	UJ	J
Trichlorofluoromethane	0.50	UJ	J
Vinyl Chloride	0.50	UJ	B,J
METALS			
Arsenic	190	J	F,H

FIELD ID	UANG-TB03-GW2		
LAB ID	SXS 01276		
DATE COLLECTED	24-Aug-95		
SAMPLE MATRIX	Water		
VOLATILE COMPOUNDS 8010/8020	**CONCENTRATION (ug/l)**	**Q**	**C**
1,1,1-Trichloroethane	0.50	UJ	B
1,1,2-Trichloroethane	0.50	UJ	C
2-Chloroethyl Vinyl Ether	0.50	UJ	B
Bromoform	0.50	UJ	C
Bromomethane	2.0	UJ	B
Vinyl Chloride	0.50	UJ	B

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

FIELD ID	UANG-S1-MW1-GW2			UANG-S1-MW2-GW2			UANG-S2-MW2-GW2			UANG-S2-MW1-GW2			UANG-S2-MW3-GW2		
LAB ID	SXS 01660			SXS 01661			SXS 01662			SXS 01663			SXS 01664		
DATE COLLECTED	6-Nov-95			6-Nov-95			6-Nov-95			6-Nov-95			6-Nov-95		
SAMPLE MATRIX	Water			Water			Water			Water			Water		
VOLATILE	CONCENTRATION			CONCENTRATION			CONCENTRATION			CONCENTRATION			CONCENTRATION		
COMPOUNDS 8010/8020	(ug/l)	Q	C	(ug/l)	Q	C	(ug/l)	Q	C	(ug/l)	Q	C	(ug/l)	Q	C
1,1-Dichloroethane	---			---			---			1.0	J	T	---		
1,2-Dichlorobenzene	---			0.20	J	A	---			---			---		
1,2-Dichloroethane	---			2.5	J	T	0.50	U	P	1.6	J	T	0.50	U	P
1,2-Dichloroethene	---			400	J	S	76	J	S	230	J	S	59	J	S
Benzene	---			0.50	U	P	---			---			---		
Bromomethane	2.0	UJ	C	2.0	UJ	C	2.0	UJ	C	2.0	UJ	C	2.0	UJ	C
Chlorobenzene	---			0.18	J	A	---			0.27	J	A	---		
Chloroform	---			---			9.4	J	B,C	---			10	J	B,C
Chloromethane	3.1	U	E	---			3.1	U	E	---			3.0	U	E
Dichlorodifluoromethane	3.1	U	E	---			3.1	U	E	---			3.0	U	E
Dichloromethane	0.50	UJ	B	0.50	UJ	B	0.50	UJ	B	0.50	UJ	B,P	0.50	UJ	B
Tetrachloroethene	---			12	J	C,S	---			31	J	C,S	2.1	J	S
Trans-1,3-Dichloropropene	---			---			---			0.89	J	T	---		
Trichloroethene	0.59	U	P	37	J	C,S	490	J	C,S	1200	J	C,S	480	J	C,S

FIELD ID	UANG-S3-MW1-GW2			UANG-RB2			UANG-TB06		
LAB ID	SXS 01665			SXS 01666			SXS 01667		
DATE COLLECTED	7-Nov-95			7-Nov-95			7-Nov-95		
SAMPLE MATRIX	Water			Water			Water		
VOLATILE	CONCENTRATION			CONCENTRATION			CONCENTRATION		
COMPOUNDS 8010/8020	(ug/l)	Q	C	(ug/l)	Q	C	(ug/l)	Q	C
1,2-Dichlorobenzene	2.3	J	T	---			---		
1,2-Dichloroethane	---			---			0.16	J	A
1,2-Dichloroethene	---			---			0.20	J	A
1,3-Dichlorobenzene	0.62	J	T	---			---		
1,4-Dichlorobenzene	4.6	J	T	0.47	J	A	---		
Benzene	0.50	U	P	0.12	J	A	---		
Bromomethane	2.0	UJ	C	2.0	UJ	C	2.0	UJ	C
Dichloromethane	0.50	UJ	B	0.50	UJ	B	0.92	J	B
O-xylene	---			0.23	J	A	---		
Toluene	---			1.3	J	T	---		
Trichloroethene	---			---			6.9	J	C

FIELD ID	UANG-S1-MW02-GW2			UANG-S1-MW01-GW2		
LAB ID	SXS 01281			SXS 01280		
DATE COLLECTED	25-Aug-95			25-Aug-95		
SAMPLE MATRIX	Water			Water		
	CONCENTRATION			CONCENTRATION		
PESTICIDES/PCBs	(ug/l)	Q	C	(ug/l)	Q	C
Aroclor 1016	1.0	UJ	B	1.0	UJ	B
Aroclor 1221	1.0	UJ	B	1.0	UJ	B
Aroclor 1232	1.0	UJ	B	1.0	UJ	B
Aroclor 1242	1.0	UJ	B	1.0	UJ	B
Aroclor 1248	1.0	UJ	B	1.0	UJ	B
Aroclor 1254	1.0	UJ	B	1.0	UJ	B
Aroclor 1260	1.0	UJ	B	1.0	UJ	B
Chlordane	0.10	UJ	B	0.10	UJ	B
Toxaphene	2.0	UJ	B	2.0	UJ	B

TABLE E.1.2.1
TABLE OF ESTIMATED DATA
ANALYTICAL DATA SUMMARY

Qualifiers (Cause Codes)

A = Reported value is between CRQL and the MDL or the CRDL and the IDL.
B = Initial calibration is out of control.
C = Continuing calibration is out of control.
D = Matrix spike recovery is outside of QC limit or none run.
E = The sample concentration was estimated due to contribution by the method blank.
F = Laboratory duplicate was out of control or not run.
G = Serial dilution %D was out of control or not run.
H = Post spike recovery was outside of the QC limit.
I = Sample preservation method unclear.
J = Surrogate recovery is outside of QC limits.
K = Laboratory Control Sample was out of control.
L = r <.995 or less than 5 point curve.
M = M-xylene + P-xylene coeluted samples
N = No MS/MSD recovery due to dilution.
O = Initial or continuing calibration blank out of control.
P = Sample concentration estimated due to contribution by the trip, equipment, rinse, or field blank.
Q = Coelution of analytes.
S = Analyzed beyond holding time.
T = Responce was not verified on the confirmation analysis.
--- = No qualification to the result or analysis not required.

TABLE E.1.2.2
TABLE OF UNUSABLE DATA
ANALYTICAL DATA SUMMARY

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FRACTION	FIELD ID	LAB ID	ANALYTE	CAUSE
METALS	UANG-BG-MW02-GW2	SXS 01279	Antimony	MS/MSD %R <30%
	UANG-BG-MW2 (0-2)	SXS 01256R	Antimony	MS/MSD %R <30%
	UANG-BG-MW2 (2-4)	SXS 01257R	Antimony	MS/MSD %R <30%
	UANG-BG-MW2 (4-6)	SXS 01258R	Antimony	MS/MSD %R <30%
	UANG-BG-MW2 (6-8)	SXS 01259R	Antimony	MS/MSD %R <30%
VOCs	UANG-S1-MW1-GW2	SXS 01660	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-S1-MW2-GW2	SXS 01661	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-S2-MW2-GW2	SXS 01662	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-S2-MW1-GW2	SXS 01663	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-S2-MW3-GW2	SXS 01664	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-S3-MW1-GW2	SXS 01665	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-RB2-GW2	SXS 01666	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration
	UANG-TB06-GW2	SXS 01667	1,1,2,2-Tetrachloroethane 2-Chloroethyl Vinyl Ether Styrene	ICV %R No Calibration No Calibration

APPENDIX F
PIEZOMETER CONSTRUCTION DETAILS AND LOGS

APPENDIX F

TABLE OF CONTENTS

LIST OF TABLES

Basewide Piezometer Logs

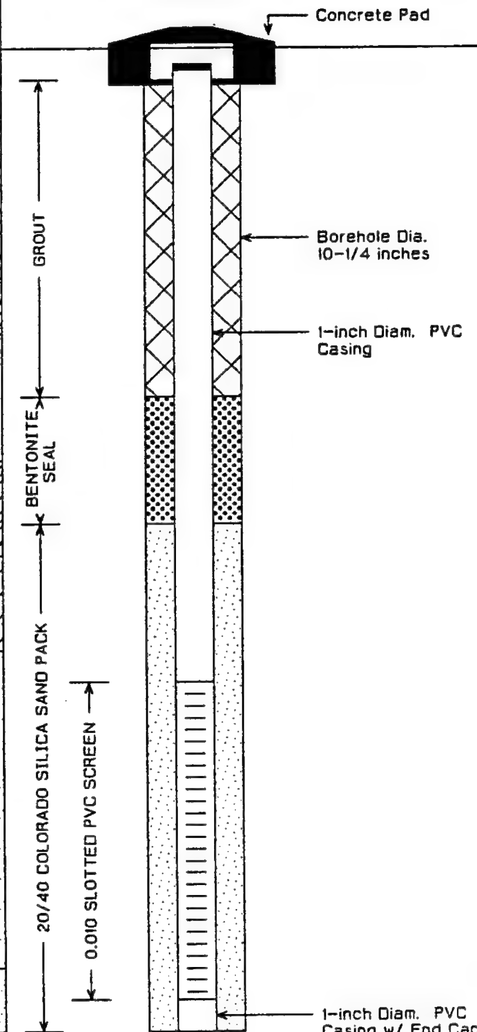
Log of Piezometer: PI-1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 5
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895639.29
GROUND ELEVATION: 4215.09 ft-MSL	EAST COORDINATE: 1873107.99
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.73 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4208.95 ft-MSL	DRILLER: Dean Walton
DATE MEASURED: 12/28/92	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4214.68 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.50 ft-BGL	SAMPLING METHOD: 5 foot long, 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 10/20/92	END COMPLETION: 10/20/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–0.5					NA	
0.5–4.5	0.5–5.5		0.0 (3)	SAND, and GRAVEL, some CLAY: fill material	GC	
4.5–6.5	5.5–10.5			SILT, trace SAND, fine: (5Y 6/2) lt. olive gray, soft, loose, non-plastic, shells, slightly moist	ML	
6.5–8				CLAY, some SILT: (5Y 5/2) olive gray, soft, non-plastic, moist	CL	
8–9.5			0.0 (8)	SAND, fine, trace CLAY: (5Y 5/2) olive gray, saturated @ 8 feet	SC	
9.5–14.5	10.5–15.5		0.0 (13)	SAND, fine grading to coarse, some CLAY: coarse sand is iron-stained, saturated	SW	
14.5–15.5				SAND, coarse: firm, well sorted	SP	
				Total depth = 15.5 ft.		

WELL DIAGRAM



Log of Piezometer: PI-2

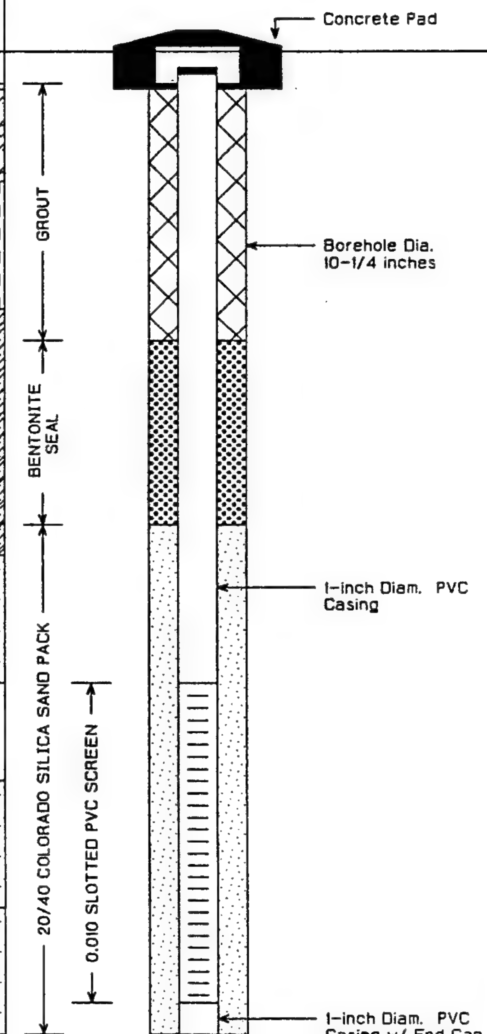
ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 6
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 896103.90
GROUND ELEVATION: 4212.86 ft-MSL	EAST COORDINATE: 1874517.22
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 4.20 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4208.36 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4212.56 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.5 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 10/21/92	END COMPLETION: 10/21/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–0.5					NA	
0.5–2	X		0.0	SAND, and GRAVEL, some CLAY: fill material	GC	
2–4	X		0.0	SILT, and CLAY: (5Y 4/1) dk. gray, roots	ML	
4–8	X		0.0, 0.0	CLAY, trace SILT: (5Y 3/1) v. dk. gray, soft, slightly plastic, moist at bottom	CL	
8–10	X		0.0	SAND, fine, and SILT: (5Y 6/2) lt. olive gray, slightly plastic, blobs of 2.5Y 5/6 lt. olive brown stained soil	SM	
10–11.5					NA	
11.5–13.5	X		0.0	SAND, medium: (5Y 4/1) dk. gray, soft, loose, well sorted, saturated, mica, wood chips at the bottom saturated	SM	
13.5–15.5	X		0.0	SAND, medium to coarse: (5Y 4/1) dk. gray, soft, loose, well sorted, subround quartz and mica	SM	
15.5				Total depth = 15.5 ft.		

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

WELL DIAGRAM



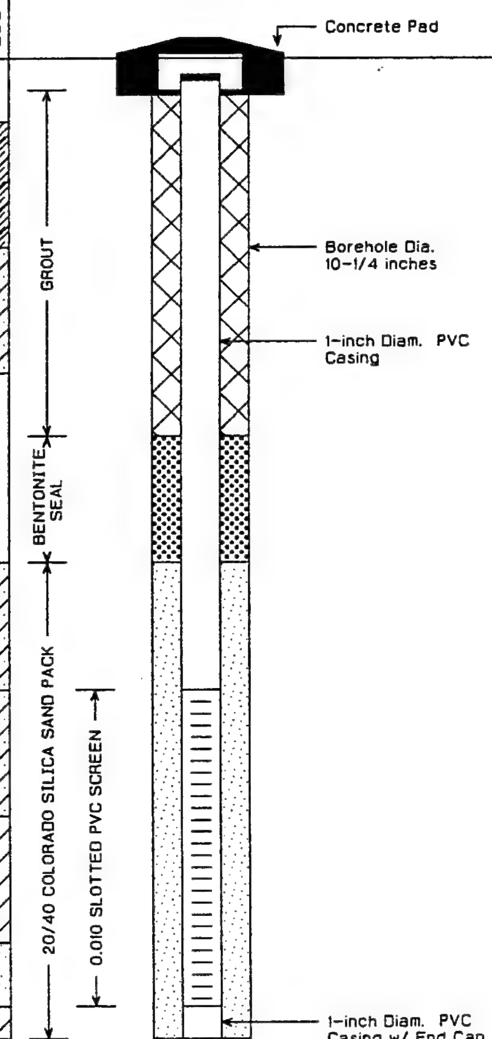
Log of Piezometer: PI-3

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-3
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 8,9
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 894223.22
GROUND ELEVATION: 4217.42 ft-MSL	EAST COORDINATE: 1873435.55
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.27 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4212.01 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4217.28 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.5 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 10/22/92	END COMPLETION: 10/23/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1					NA
1–3	1–3		0.0	CLAY, and SILT, some SAND, fine: (5Y 5/2) olive gray w/ rust and black discoloration, moist, non-plastic, roots	CL
3–5	3–5		0.0	CLAY, and SILT, some SAND, fine: (5Y 4/2) olive gray, soft, shells @ 3 feet, thin sand zone @ 3.5 feet	CL
5–8					NA
8–10	8–10		0.0	CLAY, and SILT: (5Y 4/2) olive gray, saturated, slightly plastic, shells, soft, fine sand at bottom	CL
10–12	10–12		0.0	CLAY, some SILT: (5Y 5/2) olive gray, mottled w/ (2.5Y 6/6) olive yellow, more silt at bottom	CL
12–14	12–14		0.0	CLAY: (5Y 6/2) lt. olive gray, soft, saturated, spreads easily	CL
14–15	14–15.5			SAND: (5Y 6/2) lt. olive gray,	SW
15–15.5			0.0	CLAY: (2.5Y 2/0) black, soft	CL
				Total depth = 15.5 ft.	

WELL DIAGRAM

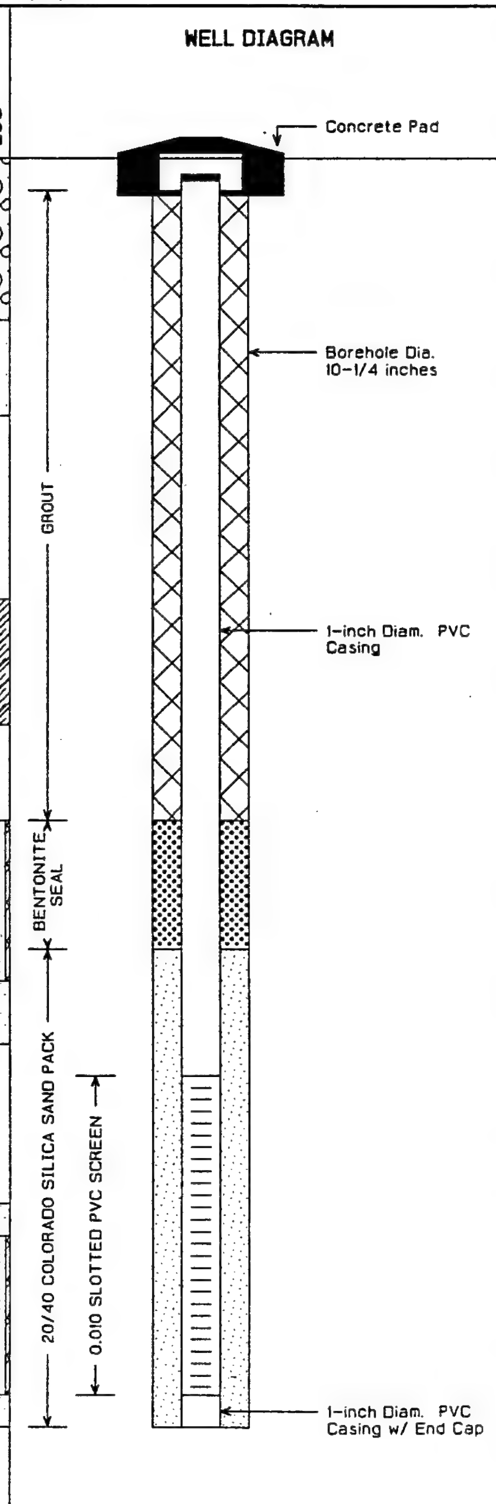


Log of Piezometer: PI-4

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-4
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 6,7
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 894905.41
GROUND ELEVATION: 4215.14 ft-MSL	EAST COORDINATE: 1874539.88
WELL DEPTH: 20.0 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 6.61 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4208.18 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4214.79 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 20.0 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 10/21/92	END COMPLETION: 10/21/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–2.5	X		0.0	GRAVEL, and SAND: fill material	GM
2.5–4	X		0.0	SILT, and SAND, some CLAY, trace GRAVEL: mottled olive gray and dk. gray, roots, organic matter, friable	ML
4–7					NA
7–9	X		0.0	CLAY, and SILT, some SAND, fine: (5Y 3/1) v. dk. gray and (2.5Y 6/2) lt. brown gray, crumbly, roots, bottom mostly silt and sand, moist	CL
9–10.5					NA
10.5–14	X		0.0 0.0	CLAY, some SILT, some SAND: (5Y 2.5/1) black at top grading into (5Y 6/2) lt. olive gray sand at bottom, shell fragments, moist	OL SW
14–16.5					NA
16.5–20	X		0.0	SAND, medium to coarse: (2.5Y N4/0) dk. gray, saturated, well sorted, micaceous	SW
				CLAY: (2.5Y N3/1) v. dk. gray, soft, organic	OL
				SAND: (2.5Y N4/0) dk. gray, loose, soft, micaceous	SW
				Total depth = 20.0 ft.	



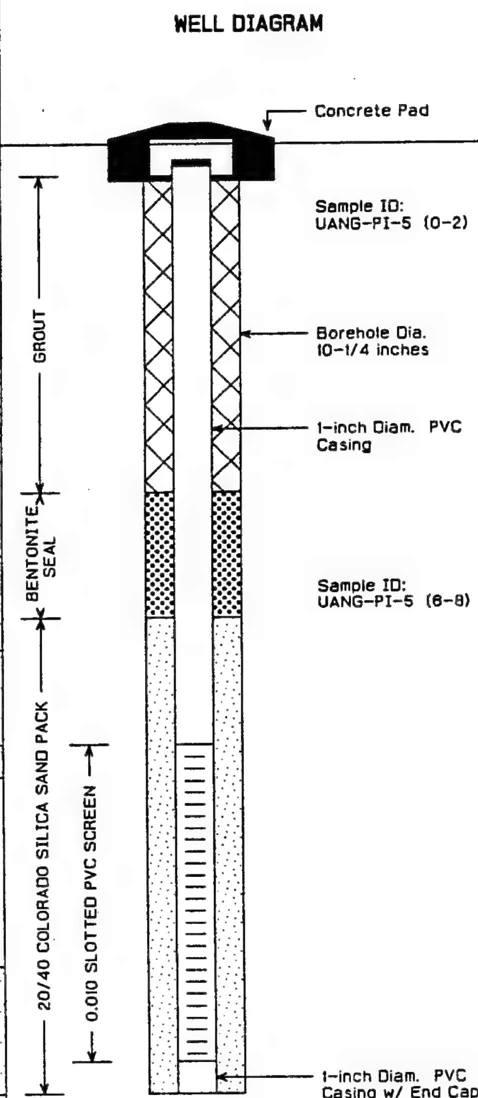
Log of Piezometer: PI-5

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-5
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 9-11
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895442.95
GROUND ELEVATION: 4214.44 ft-MSL	EAST COORDINATE: 1873574.26
WELL DEPTH: 15.0 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: Not Measured on this Date ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: Not Measured on this Date ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4214.29 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.0 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 10/22/92	END COMPLETION: 10/23/92

DEPTH (feet)	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1			GRAVEL, and SAND, some CLAY: fill material	GM
1–4.5	X	0.0	SAND, and CLAY: (5Y 5/1) gray, moist non-plastic	SC
4.5–5		2286	CLAY, and SILT: (5Y 2.5/1) black, shells, organic,	OL
5–6			SILT, and CLAY: (5Y 6/2) lt. olive gray, moist, soft, odor	ML
6–6.5			CLAY, and SILT: (5Y 5/1) gray, soft, moist	ML
6.5–8	X	1616	SAND, fine: (5Y 6/1) gray, soft, saturated	SW
8–9.5		341	SAND, fine, and CLAY: (5Y 5/1) dk. gray, soft, odor	SM
9.5–10			SAND, medium to coarse: (2.5Y 4/0) dk. gray, loose, saturated	SW
10–13			SILT: (2.5Y 4/1) dk. gray, soft, saturated	ML
13–15		0.0	SAND, medium: (2.5Y 4/1) dk. gray, soft, loose, saturated	SW
15			Total depth = 15.0 ft. Total depth = 15.5 ft.	

WELL DIAGRAM



FILE: PI-5.LOG

Log of Piezometer: PI-6

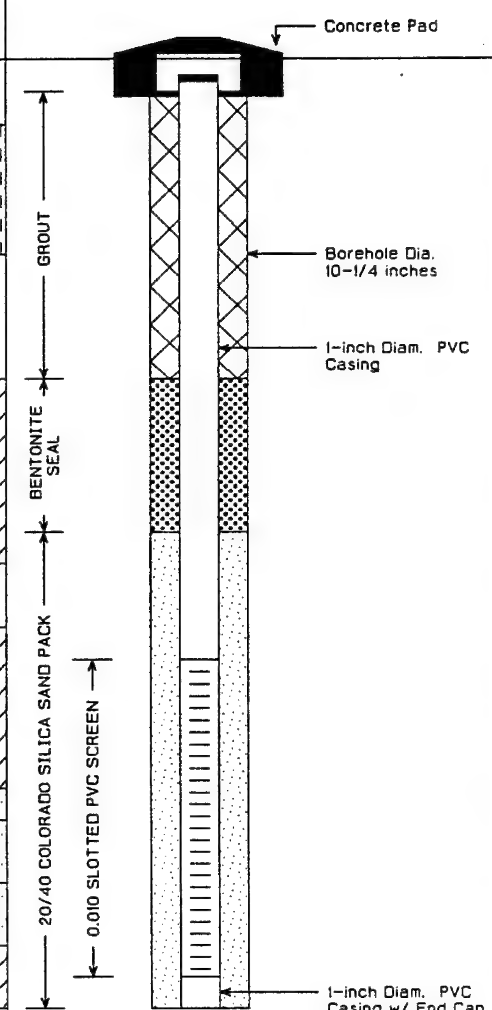
ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-6
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 8,9
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893032.71
GROUND ELEVATION: 4218.06 ft-MSL	EAST COORDINATE: 1873490.58
WELL DEPTH: 15.0 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 6.72 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4211.13 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4217.85 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.0 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 10/22/92	END COMPLETION: 10/22/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1					NA
1–3	1–3		0.0	SILT, and CLAY, some SAND: (2.5Y 5/4) lt. olive brn., damp	ML
3–5					NA
5–7.9	5–15		0.0	CLAY: (5Y 6/2) lt. olive gray, with (2.5Y 5/6) lt. olive brn. streaks, saturated, very soft, semi-cohesive, some gravel @ 8 ft.	CL
7.9–9			0.0	SILT: (5Y 6/2) lt. olive gray, with (2.5Y 5/6) lt. olive brn. streaks, soft	ML
9–11.5			0.0	CLAY: (5Y 5/2) olive gray, soft, saturated, semi-plastic, thin zone of fine sand at 8 ft.	CL
11.5–12				SAND, some GRAVEL: (5Y 5/2) olive gray	SW
12–13			0.0	SAND, fine, and SILT, some CLAY: (5Y 5/2) olive gray	SM
13–14				SAND, med to coarse, and SILT: (5Y 5/2) olive gray, loose, moderately well sorted, mica and quartz	SM
14–15			0.0	CLAY: (5Y 5/1) gray, very soft, saturated	CL
15				Total depth = 15.0 ft.	

GRAPHIC LOG

WELL DIAGRAM



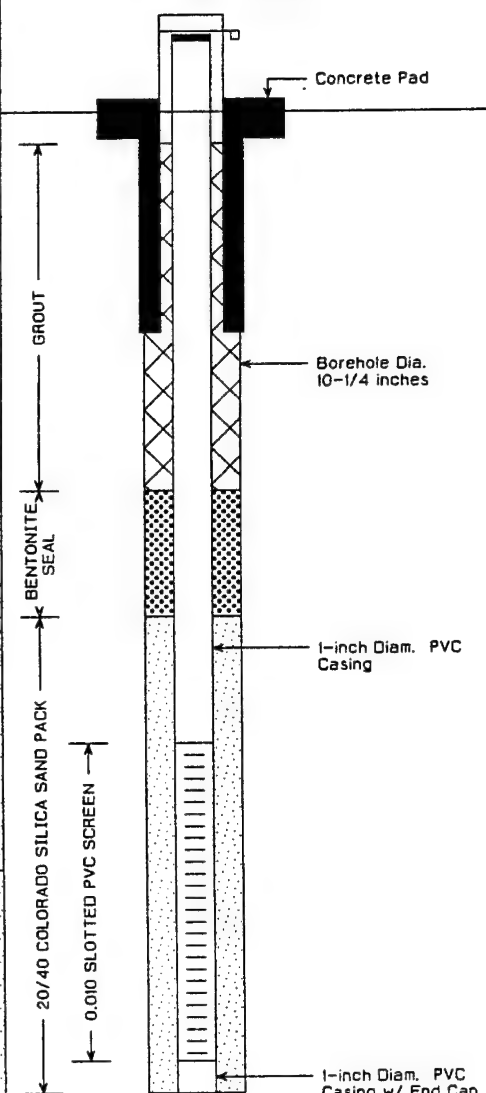
Log of Piezometer: PI-7

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-7
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 57
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 896901.99
GROUND ELEVATION: 4216.68 ft-MSL	EAST COORDINATE: 1873471.49
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 10.00 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4209.57 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Acker Soil Max
TOC ELEVATION: 4219.57 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.5 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 12/18/92	END COMPLETION: 12/18/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1				SILT, and CLAY: (10YR 3/1) v.dk. gray, topsoil-humus and roots, soft	OL
1			0.0	SILT, and CLAY, some SAND: (2.5Y 3/2) v. dk. gray brn., very soft, damp, crumbly	ML
					NA
2				CLAY, and SILT, some SAND: (2.5Y 5/2) grayish brown, soft, damp, crumbly	CL
3			0.0	SAND, and SILT: (2.5Y 6/2) lt. brown gray, very soft, crumbly, moist	SM
4				SAND, and SILT: (2.5Y 6/3) lt. yellowish brown, w/ (2.5Y 6/6) olive yellow staining, saturated @ about 5 ft.	SM
5			0.0		
7			0.0		
8				SAND, coarse: (2.5Y 5/3) lt. olive brown, loose, well sorted, saturated, mica, quartz,	SP
				CLAY: (2.5Y 6/2) lt. brown gray, soft,	CL
9			0.0	SAND, coarse: (2.5Y 5/3) lt. olive brown, well sorted	SP
11			0.0		
12				SAND, coarse: (5Y 5/2) olive gray, well sorted	SP
13			0.0		
15.5				Total depth = 15.5 ft	

WELL DIAGRAM



Log of Piezometer: PI-8

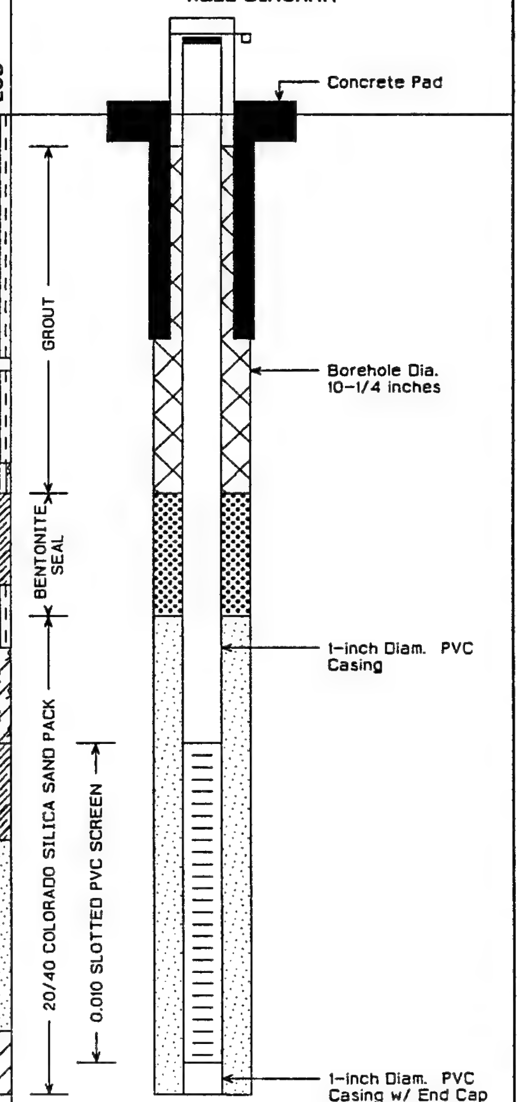
ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-8
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 57,58
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895657.32
GROUND ELEVATION: 4215.38 ft-MSL	EAST COORDINATE: 1874236.48
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 10.02 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4208.27 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Acker Soil Max
TOC ELEVATION: 4218.29 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 15.5 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 12/18/92	END COMPLETION: 12/18/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–4				SILT, and CLAY, trace GRAVEL: (5Y 3/1) v. dk. gray, soft, non-plastic	ML	
4				CLAY: (5Y 6/3) pale olive, firm, dry, crumbly, non-plastic	CL	
				SILT, and CLAY, trace GRAVEL: (5Y 3/1) v. dk. gray, damp, non-plastic	ML	
				SILT: (5Y 2.5/1) black, organic, gastropoda shells,	OL	
				CLAY, and SILT, trace GRAVEL: (5Y 3/1) v. dk. gray, saturated @ 6.5 ft.	CL	
				SILT, and CLAY: (5Y 5/2) olive gray, shells	ML	
				SILT, trace GRAVEL: (5Y 2.5/1) v. dk. gray, trace shells		
				CLAY, and SILT: (5Y 5/2) olive gray, shells	CL	
10				CLAY, and SILT, some SAND: (2.5Y 4/2) dk. grayish brown, soft	CL	
				SAND, coarse: (5Y 5/3) olive, well sorted, loose	SP	
				SAND, coarse: (5Y 5/1) gray, well sorted, loose, quartz, mica, ferromagnesian-silicate minerals		
				CLAY: (5Y 4/1) gray, soft	CL	
15.5				Total depth = 15.5 ft.		

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21

WELL DIAGRAM



Log of Piezometer: PI-9

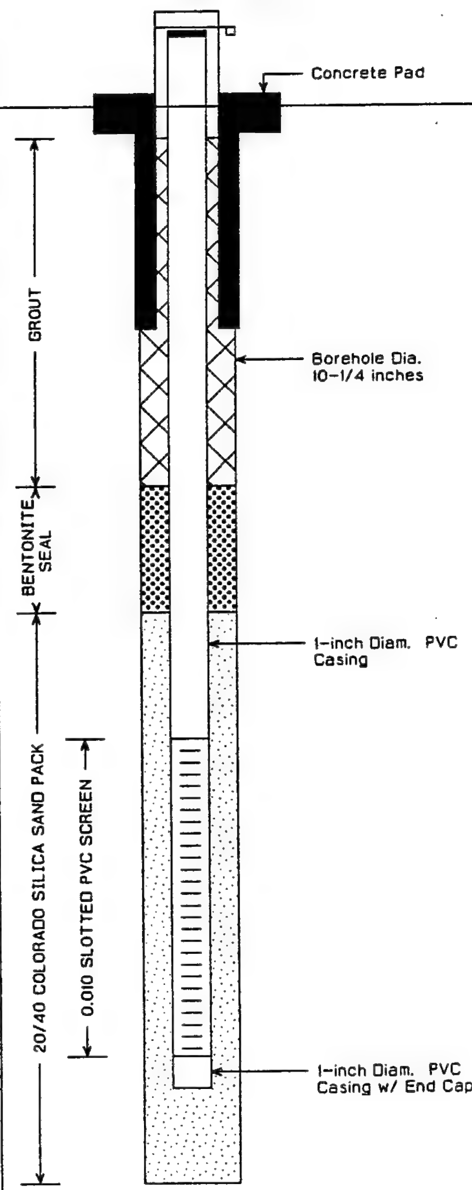
ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-9
PROJECT NUMBER: UT014	REF. LOGBOOK: 6, pg. 2
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 894365.88
GROUND ELEVATION: 4216.84 ft-MSL	EAST COORDINATE: 1874093.92
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: R.W. Graves
WATER LEVEL: 10.31 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4209.73 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Acker Soil Max
TOC ELEVATION: 4220.04 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 17.0 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 12/21/92	END COMPLETION: 12/21/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
				CLAY, some SAND, trace GRAVEL: (5Y 6/3) pale olive, dry	CL	
					NA	
				SILT: (5Y 6/3) pale olive,	ML	
				CLAY: (5Y 6/3) pale olive, dry	CL	
				SAND, fine to med: (5Y 6/3) pale olive and (10YR 6/8) brownish yellow	SW	
				CLAY: (5Y 6/3) pale olive, moist, plastic, interlayered with silt containing mica grains	CL	
				SILT: (5Y 6/3) pale olive	ML	
				CLAY: (5Y 6/3) pale olive interlayered with fine-grained (2.5YR 4/6) red sand, saturated	CL	
				CLAY: (5Y 6/3) pale olive, homogenous, worm holes, shells, (2.5YR 4/6) red mottling	CL	
				CLAY: (5Y 6/4) olive, plastic, moist to saturated, worm holes		
				SAND, fine: (5Y 6/4) pale olive	SW	
				CLAY, little SAND, fine: (5Y 5/4) olive, well sorted, loose	CL	
				CLAY: (5GY 6/1) greenish gray, saturated	CL	
				CLAY, trace SAND: (5GY 6/1) greenish gray, some black clay, saturated	CL	
				Total depth = 17.0 ft.		

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

WELL DIAGRAM



Log of Piezometer: PI-10

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Basewide Piezometer PI-10
PROJECT NUMBER: UT014	REF. LOGBOOK: 6, pg. 2
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893052.93
GROUND ELEVATION: 4218.96 ft-MSL	EAST COORDINATE: 1873973.60
WELL DEPTH: 15.5 ft-BGL	LOGGED BY: R.W. Graves
WATER LEVEL: 7.29 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4211.54 ft-MSL	DRILLER: Steve Mott
DATE MEASURED: 12/28/92	DRILLING RIG: Acker Soil Max
TOC ELEVATION: 4218.83 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 16.0 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 12/21/92	END COMPLETION: 12/21/92

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
				CLAY, some SAND, trace GRAVEL: (5Y 2.5/1) black, damp, limestone pebbles	CL	
				CLAY, and SILT, little SAND: (5Y 3/2) dk. olive gray, damp	CL	
				CLAY, some SAND: (5Y 6/3) pale olive, dry	CL	
				SAND, fine, some CLAY, some SILT: (5Y 5/4) olive, damp	SC	
				CLAY, some SILT: (2.5Y 6/8) olive yellow, and (5Y 5/2) olive gray, moist	CL	
				CLAY, some SILT, trace GRAVEL: (5Y 6/3) pale olive, saturated, quartzite pebbles, mica grains		
				CLAY, and SILT, little SAND: layered (5Y 6/1) lt. gray and (7.5YR 4/4) dk. brown, mica		
				CLAY: (5Y 6/3) pale olive, homogenous, saturated	CL	
				CLAY, and SILT, some SAND: (5Y 6/3) pale olive, mottles w/ (10YR 6/8) brownish yellow, thin layer of charcoal at bottom, moist	CL	
				CLAY: (5Y 6/3) pale olive, moist	CL	
				CLAY: (2.5Y 5/N5) gray, moist, plastic		
				SAND, med to coarse: (10YR 6/2) lt. brownish gray, well sorted, moist	SP	
				Total depth = 16.0 ft.		

WELL DIAGRAM

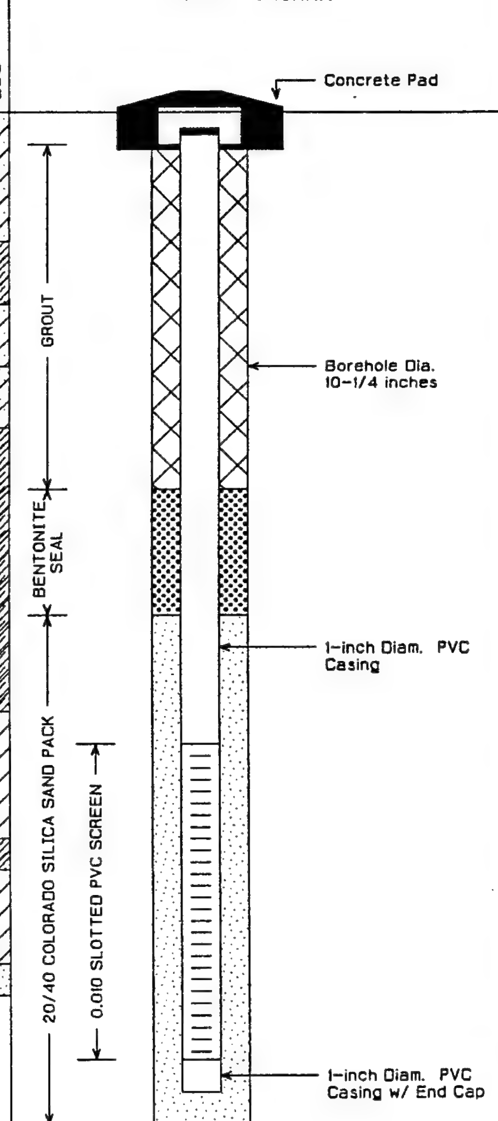


TABLE F.1
CONSTRUCTION DETAILS FOR BASEWIDE PIEZOMETERS
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Station	Land Surface Elevation (feet above MSL)	Top of Casing Elevation (feet above MSL)	Borehole Depth (feet BLS)	Well Depth (feet BLS)	Screened Interval (feet BLS)
PI-1	4215.09	4214.68	15.5	15.5	10.0-15.0
PI-2	4212.86	4212.56	15.5	15.5	10.0-15.0
PI-3	4217.42	4217.28	15.5	15.5	10.0-15.0
PI-4	4215.14	4214.79	20.0	20.0	14.5-19.5
PI-5	4214.44	4214.29	15.0	15.0	9.5-14.5
PI-6	4218.06	4217.85	15.0	15.0	9.5-14.5
PI-7 (1)	4216.68	4219.57	15.5	15.5	10.0-15.0
PI-8 (1)	4215.38	4218.29	15.5	15.5	10.0-15.0
PI-9 (1)	4216.84	4220.04	17.0	15.5	10.0-15.0
PI-10	4218.96	4218.83	16.0	15.5	10.0-15.0

MSL = Mean Sea Level
BLS = Below Land Surface
(1) Above Ground Well Casing

APPENDIX G
MONITORING WELL CONSTRUCTION DETAILS AND LOGS AND SOIL BORING LOGS

APPENDIX G

TABLE OF CONTENTS

LIST OF TABLES

Background Soil Boring/Monitoring Well(s)

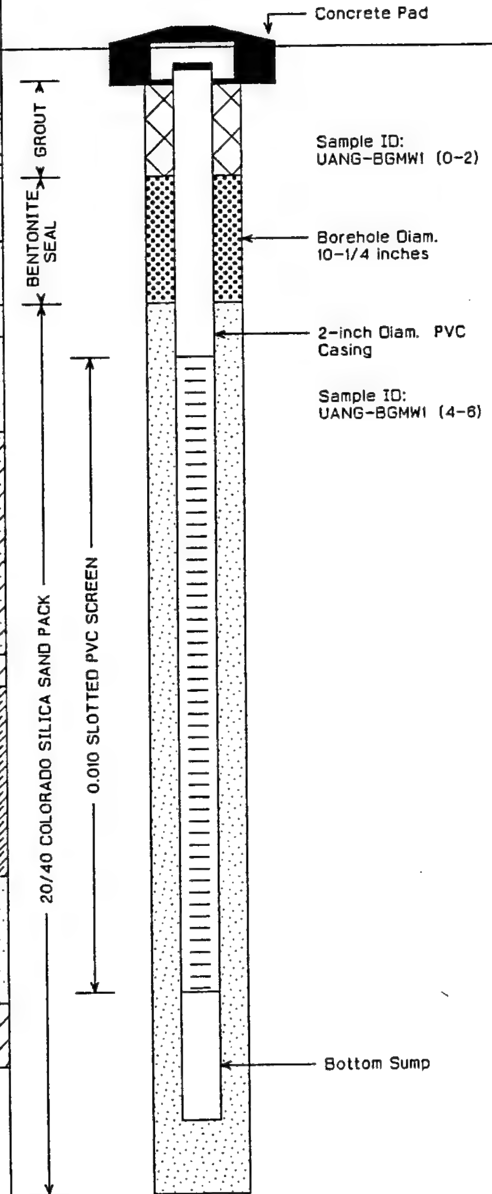
Log of Monitoring Well: BGMW1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Background
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 83
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893043.2165
GROUND ELEVATION: 4219.11 ft-MSL	EAST COORDINATE: 1873983.7638
WELL DEPTH: 16.85 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 6.29 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4213.44 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4218.74 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 18.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/13/93	END COMPLETION: 01/13/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HOSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1					NA
1–2	X	X	0.0	SAND and GRAVEL, some SILT: brown, fill material	GM
2–3					NA
3–4	X		0.0	SAND, and SILT, some GRAVEL: (5Y 4/2), olive gray, soft, damp	SM
4–4.5	X			SAND, and SILT, some CLAY: (5Y 5/2), olive gray, soft,	SM
4.5–6	X	X	0.0	SAND, and SILT: (5Y 6/2), lt.olive gray, soft, loose, saturated	SM
6–9.5	X		0.0, 0.0	CLAY, and SAND, some SILT: (5Y 6/2), lt. olive gray, mottled with (2.5Y 5/4), lt. olive brn, soft, saturated, mica	CL
9.5–10	X			CLAY: (5GY 5/1), greenish gray, mottled with (2.5Y 5/4), dk. brown inclusions of iron oxide material	CL
10–13	X		0.0	CLAY, and SILT: SAA	CL
13–15	X		0.0	SAND, little SILT: (5Y 5/1), gray, quartz, mica, Fe-Mg silicate minerals, loose	SW
15–16	X		0.0	CLAY: (5GY 5/1), greenish gray, soft	CL
18				Total depth = 18.0 ft.	

WELL DIAGRAM



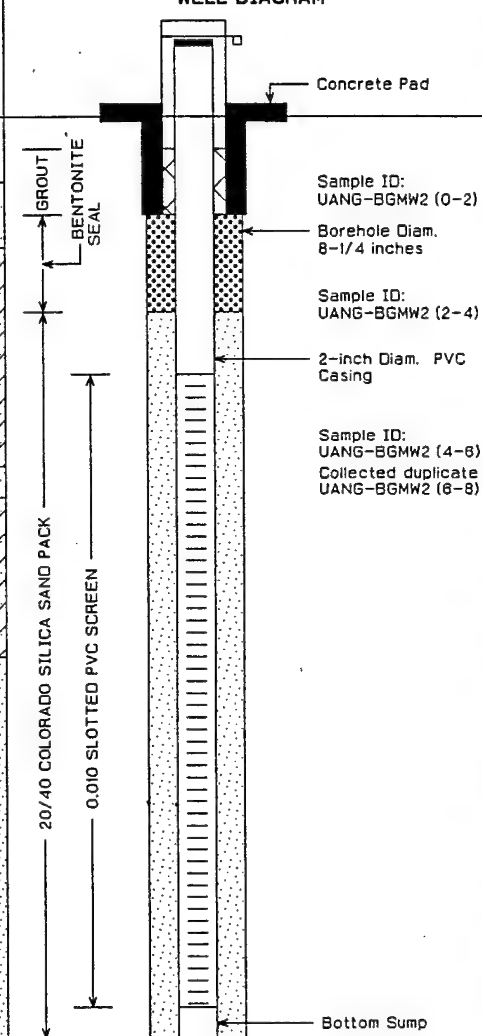
Log of Monitoring Well: BGMW2

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Background
PROJECT NUMBER: UT014	REF. LOGBOOK: 3, pg.6
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 896871.93
GROUND ELEVATION: 4215.54 ft-MSL	EAST COORDINATE: 1873328.04
WELL DEPTH: 14.50 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 9.83 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: 4208.26 ft-MSL	DRILLER: Russ Werner
DATE MEASURED: 8/25/95	DRILLING RIG: CME 75
TOC ELEVATION: 4218.09 ft-MSL	DRILLING METHOD: 4 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 14.50 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split spoon
BEGIN COMPLETION: 8/17/95	END COMPLETION: 8/17/95

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–1				Topsoil:	NA	
1–2			0.0	SILT, some SAND: (10YR 5/2), grayish brown, dry, crumbly, roots	ML	
2–5.5			0.0 0.0	SAND, some SILT and CLAY: (2.5Y 6/2), lt. grayish brown, damp, loose	SC	
5.5–6				SAND, little SILT: (5Y 5/3), olive, soft, loose, saturated, mica	SW	
6–8.5			0.0	SAND, some CLAY: (2.5Y 5/4), lt. olive brown, soft, mica, rust stains	SC	
8.5–14.5			0.0	SAND, coarse: (5Y 5/1), gray, granitic minerals, loose, soft	SP	
14.5				Total depth = 14.5 ft.		

WELL DIAGRAM



Site 1 - Former Pesticide Dump

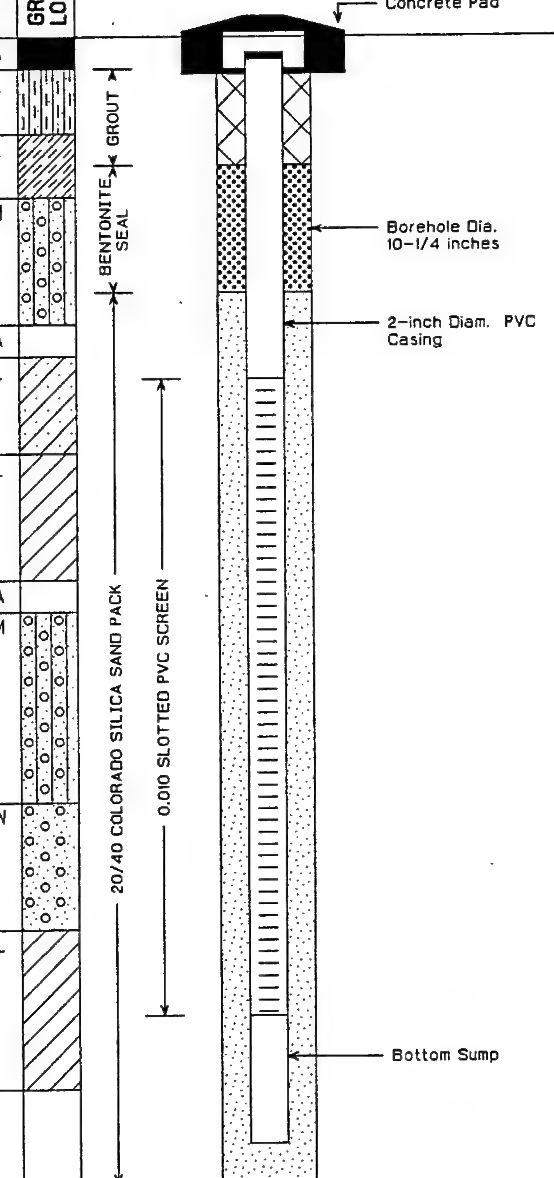
Log of Monitoring Well: S1MW1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1, Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg.81
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893082.1260
GROUND ELEVATION: 4218.32 ft-MSL	EAST COORDINATE: 1873686.2852
WELL DEPTH: 17.35 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.72 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4213.01 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/21/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4218.02 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 18.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/12/93	END COMPLETION: 01/12/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0				ASPHALT:	NA
0.5–1.5				SILT, and CLAY, some SAND: (5Y 4/2), olive gray, soft, non-plastic, damp	ML
1.5–2.5			2.1	CLAY, and SILT: (5Y 7/3), pale yellow, damp	CL
2.5–4.3			2.5	SAND, fine, and SILT, some CLAY: (5Y 6/3), pale olive, mottled with (2.5Y 5/6), lt. olive brown, moist, loose	SM
4.3–4.5				CLAY: (5Y 7/2), lt. gray, soft, semi-plastic	NA
4.5–6.5			3.0	CLAY, trace SAND: (5Y 6/2), lt. olive gray, mottled with (7.5YR 4/6), strong brown, soft, non-plastic	CL
6.5–8.5			3.7	CLAY: (5Y 6/3), p. olive, mottled with (2.5Y 5/6), lt. olive brn, soft, saturated	CL
8.5–9					NA
9–10.5			3.8	SAND, fine, and SILT: (5Y 5/2), olive gray, soft	SM
10.5–12			4.7	SAND, fine, and SILT, some CLAY: (5Y 5/1), gray, mottled with (2.5Y 5/6), lt. olive brown,	
12–12.5				SAND, medium: (5Y 5/1), gray, loose,	SW
12.5–14			5.1	SAND, coarse, trace GRAVEL: (5Y 5/1), gray, loose, subround, moderately well sorted, quartz, and ferromagnesium silicate minerals	
14–16.5			5.2	CLAY: (5BG 4/1), dk. greenish gray	CL
18				Total depth = 18.0 ft.	

WELL DIAGRAM



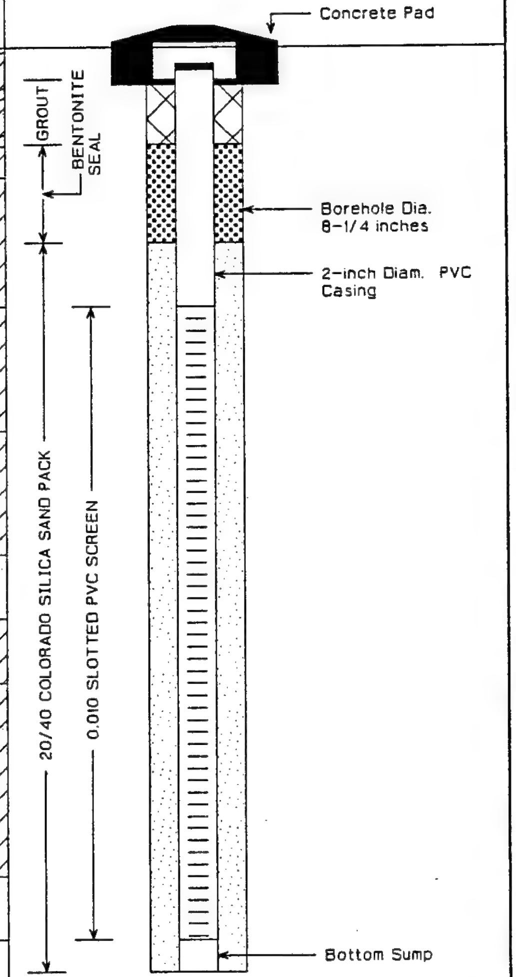
Log of Monitoring Well: S1MW2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1, Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 3, pg.2
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893026.13
GROUND ELEVATION: 4217.93 ft-MSL	EAST COORDINATE: 1873616.75
WELL DEPTH: 14.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 6.18 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: 4211.50 ft-MSL	DRILLER: Russ Werner
DATE MEASURED: 8/25/95	DRILLING RIG: CME 75
TOC ELEVATION: 4217.68 ft-MSL	DRILLING METHOD: 4 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 14.5 ft-BGL	SAMPLING METHOD: 3 in. ID CME core
BEGIN COMPLETION: 8/15/95	END COMPLETION: 8/15/95

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–2				SAND, and GRAVEL, some SILT and CLAY: (2.5Y 4/2), dk. grayish brown, hard, dry, minor organic silt	GC
2–4			3.8	SAND, and CLAY: (5Y 5/2), olive gray to (5Y 5/3) olive, (10 YR 4/6), dk. yellowish brown staining, firm, layers that are more sandy	SC
4–6				CLAY, little sand: (5Y 5/3), olive, soft, non-plastic, moist	CL
6–8			1.2	SAND, and CLAY: (5Y 5/3), olive, mottled with (10YR 4/6), dk. yellowish brown, some hollow cavities with decomposed dark organic matter, firm	SC
8–9				SAND: fine to med, (5Y 5/2), olive gray, firm, saturated	SW
9–10				CLAY: (5Y 5/3), olive, soft, non-plastic	CL
10–13			3.2	SAND, and CLAY: (5Y 5/3), olive, saturated, soft to firm	SC
13–14.5				SAND, medium to coarse: (5Y 5/1), gray, loose, granitic origin, mica and quartz, some dark ferromagnesian silicate minerals, subangular and moderate sorting	SW
				Total depth = 14.5 ft.	

WELL DIAGRAM



FILE: S1-MW2.LOG

Log of Soil Boring: SB1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1, Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 40
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 892953.95	DRILLER: Steve Mott
EAST COORDINATE: 1873653.15	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4218.17 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/11/92 @ 0945 END: 12/11/92 @ 1015	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				SAND, and GRAVEL: fill material	GW		
0.5–1		☒	108	SILT: (5Y 2.5/1), black, organic, soft, shells, non-plastic	OL		ID: UANG-S1-SB1 (0-2) Headspace @ 0.75 ft
1–2				CLAY, and SILT, some SAND: (5Y 4/2), olive gray, soft, moist, non-plastic	CL		
2–4			16.0	CLAY, and SILT: (5Y 6/2), lt. olive gray, firm, plastic, thin sand zone @ 3.5 feet,	CL		Headspace @ 3.5 ft
4–4.5				CLAY: (5Y 6/2), lt. olive gray, soft, moist	CL		
4.5–5				CLAY: (5Y 7/2), lt. gray, stiff, cracked, and dry	CL		
5–6.5		☒	29.2	CLAY: (5Y 5/2), olive gray, mottled with (2.5Y 5/6), lt. olive brown, saturated	CL		ID: UANG-S1-SB1 (4.0-6.5) Headspace @ 5.0 ft Sampled in dessicated hard, light gray clay
				Total depth=6.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S1-SB1.LOG

Log of Soil Boring: SB2

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1, Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 40
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 892983.06	DRILLER: Steve Mott
EAST COORDINATE: 1873650.90	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4218.16 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/11/92 @ 1030 END: 12/11/92 @ 1055	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1.5				SILT: (5Y 2.5/1), black, organic, shells, soft, non-plastic gravel at very top	OL		
1.5–2.0		X	14.5	SILT, some clay, little SAND: (2.5Y 4/2), dk. grayish brown soft, non-plastic, moist	ML		ID: UANG-S1-SB2 (0-2) Headspace @ 1.50 ft
2.0–4.0				CLAY, some SILT, some SAND: (5Y 6/2), lt. olive gray, soft, moist, non-plastic	CL		
4.0–4.5			17.0	CLAY: (5Y 6/2), lt. olive gray, soft, moist,	CL		Headspace @ 4.0 ft
4.5–5.0				CLAY, little SAND: (5Y 7/2), lt. gray, firm, brittle, damp	CL		
5.0–6.5		X	12.9	CLAY, some SAND: (5Y 5/2), olive gray, mottled with (2.5Y 5/6), lt. olive brown, saturated	CL		ID: UANG-S1-SB2 (4.0-6.5) Headspace @ 5.0 ft Collected MS and MSD
				Total depth=6.5 ft.			

Depth scale: 1–21 ft

Log of Soil Boring: SB3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1, Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 41
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893012.04	DRILLER: Steve Mott
EAST COORDINATE: 1873655.19	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4218.38 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/11/92 @ 1100 END: 12/11/92 @ 1125	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1	X			CLAY, and SILT, some SAND: (5Y 5/2), olive gray, soft, gravel at top	CL		
1–2	X		8.7	SILT, some CLAY, some SAND: (2.5Y 6/2), lt. brownish gray, soft crumbly	ML		Headspace @ 1.00 ft
2–4	X	⊠	7.1	SAND, and SILT: (5Y 6/2), lt. olive gray, soft, moist, crumbly, more sand at bottom of interval	SM		ID: UANG-S1-SB3 (2-4) Headspace @ 3.0 ft
4–6.5	X	⊠	12.0	CLAY: (5Y 5/2), olive gray, soft, non-plastic,	CL		ID: UANG-S1-SB3 (4.0-6.5) Headspace @ 4.5 ft; Collected duplicate UANG-S1-SB3 (6.5-8.5)
6.5				Total depth=6.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S1-SB3.LOG

Log of Soil Boring: SB-4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 – Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 33
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 9.5' ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 893043.2699	DRILLER: Jim Peterson
EAST COORDINATE: 1873698.5399	DRILLING RIG: B-61
GROUND ELEVATION: 4218.21 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 09:26 26 Oct 94 END: 10:57 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				Asphalt	NA		
0.5–1				Road Base	NA		
1–3			0.0	CLAY some SILT: (5Y 6/3) pale olive, red mottling, dry, hard, plastic to 1.75', moist sandy clay to 1.95', moist, soft, plastic silty clay with sand to 2.3'	CL		
3–5			0.0	SAND, fine to coarse, and CLAY: (5Y 6/2) light olive gray, moist, plastic, grading to clay with sand (7.5YR 5/8) strong brown.			SAMPLE ID: UANG-S1-SB4 (3.5-5.5)
5–7			0.0	CLAY: (5Y 6/3) pale olive, mottled with (5Y 7/2) light gray, moist, plastic, some thin sand bedding with red mottling, some black staining			
7–9.5			0.0	SAND, very fine, and CLAY, some SILT: (5Y 5/3) olive, saturated, red mottling.	SC		SAMPLE ID: UANG-S1-SB4 (7.5-9.5)
9.5				Total depth 9.5 ft BGL			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB-5

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 - Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 33
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 9.0' ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 893089.3412	DRILLER: Jim Peterson
EAST COORDINATE: 1873730.9641	DRILLING RIG: B-61
GROUND ELEVATION: 4217.84 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 11:14 26 Oct 94 END: 11:58 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				Asphalt	NA		
				Road Base	NA		
1–3	1–2.4	1–2.4	0.0	SAND and some CLAY: (5Y 5/2) olive gray, with red mottling, moist, 15% organics (roots), clay content increasing with depth.	SC		SAMPLE ID: UANG-S1-SB5 (1-3)
3–5	3–4.3		0.0	SAND, fine to coarse, and CLAY, thinly bedded: (5Y 6/3) pale olive, red mottling, wet, slightly plastic, some mica, clay content increasing with depth.	SC		
5–7	5–7	5–7	0.0	CLAY, some SILT: (5Y 6/2) light olive gray, moist, 1/2 inch black organic stained zone at 5'8", red mottling.	CL		SAMPLE ID: UANG-S1-SB5 (5-7)
7–8.2	7–8.8			CLAY: (5Y 6/2) light olive gray, moist.	CL		
8.2–9			0.0	CLAY and SAND: (5Y 6/2) light olive gray, moist, red mottling and rootlets.			
9				Total depth 9.0 ft BGL			

FILE: SISB-5.LOG

Log of Soil Boring: SB-6 — ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 - Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 33
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 9.0' ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 892946.7361	DRILLER: Jim Peterson
EAST COORDINATE: 1873690.1406	DRILLING RIG: B-61
GROUND ELEVATION: 4217.83 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 13:04 26 Oct 94 END: 13:36 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				Asphalt	NA		
				Road Base	NA		
1–3	X	X	0.0	Topsoil 1" (10YR 4/1) dark gray, SAND, fine, some CLAY: (5Y 6/3) pale olive, moist, poorly sorted, some mica, grading to thinly bedded sandy clay (5Y 6/3) pale olive.	SC		SAMPLE ID: UANG-S1-SB6 (1-3) Collected Duplicate: UANG-S1-SB6 (3-5)
3–5	X	X	0.0	CLAY, some SAND, medium to coarse: (5Y 6/2) light olive gray, moist.	CL		
				SAND, coarse: (5Y 6/2) light olive gray, wet, poorly sorted.			
5–7	X		0.0	CLAY: (5Y 6/2) light olive gray, and SAND, medium (10YR 4/4) dark yellowish brown, wet, red mottling.	SC		SAMPLE ID: UANG-S1-SB6 (5-7)
				CLAY, some SAND fine to medium: (5Y 6/2) light olive gray, wet.			
				SAND, fine, some CLAY: (5Y 6/2) light olive gray, moist, red mottling.			
7–9	X		0.0	SAND, medium some CLAY, (5Y 6/2) light olive gray, wet.	CL		
				CLAY, some SAND, medium (5Y 5/3) olive, moist			
				CLAY, some SAND, medium (5Y 5/3) olive, moist, red mottling in sand, grading to more sand with depth.			
9				Total depth 9.0 ft BGL			

FILE: SISB-6.LOG

Log of Soil Boring: SB-7

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 – Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 34
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 9 ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 892983.9463	DRILLER: Jim Peterson
EAST COORDINATE: 1873684.2486	DRILLING RIG: B-61
GROUND ELEVATION: 4218.66 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 13:45 26 Oct 94 END: 14:52 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				Asphalt	NA		
				Road Base	NA		
1–3	X	X	20.4	CLAY, little silt, some SAND: (5G 5/1) greenish gray, dry, hard, slightly plastic, 1 large (3") well rounded quartzite pebble.	CL		SAMPLE ID: UANG-S1-SB7 (1-3)
3	X			CLAY, some SAND, medium: (2.5Y 5/3) light olive brown, moist, red and gray mottling, black staining.			
3.5–5			23.5	SAND, coarse, and CLAY: (5G 6/1) greenish grey, moist, poorly sorted sand, interbedded with clay layers.	SM		
5	X	X	34.2	CLAY: (5G 6/1) greenish gray, moist, plastic, black staining.	CL		SAMPLE ID: UANG-S1-SB7 (5-7)
5.5–7				SAND, some SILT: (5G 6/1) greenish gray, red mottling.	SM		
7	X		0.0	SAND, coarse, some CLAY: (5Y 6/2) light olive gray, wet, poorly sorted.	SC		
				CLAY, some SILT: (5Y 6/2) light olive gray, moist, plastic, thinly laminated, red mottling.	CL		
				SAND, coarse: (5Y 6/2) light olive gray, wet, poorly sorted.	SP		
–9				CLAY, some SILT: (5Y 6/2) light olive gray, wet, plastic, thinly bedded, red mottling.	CL		
				Total depth 9.0 ft BGL			

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21

FILE: S1SB-7.LOG

Log of Soil Boring: SB-8

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 - Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 34
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 7.0' ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 892998.4288	DRILLER: Jim Peterson
EAST COORDINATE: 1873680.5249	DRILLING RIG: B-61
GROUND ELEVATION: 4218.84 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 15:02 26 Oct 94 END: 15:40 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				Asphalt	NA		
				Road Base	NA		
1–2	X	X	0.0	SILT, and SAND, fine (2.5Y 6/3) light yellowish brown, dry, hard, with 5% rootlets, mottled light gray.	ML		SAMPLE ID: UANG-S1-SB8 (1-3) Collected MS/MSD
3–4	X		0.0	CLAY, some SILT (5Y 5/1) gray, moist, hard, with 2% rootlets.	SM		
				SAND, medium, some SILT (5Y 6/3) pale olive, moist, red mottling.	CL		
5				CLAY, some SILT (5Y 7/4) pale yellow, moist, laminated, red mottling.			
5–6	X	X	765.0	CLAY, some SILT (5GY 6/1) greenish gray, moist, plastic, with black staining.			SAMPLE ID: UANG-S1-SB8 (5-7) Collected Duplicate: UANG-S1-SB8 (7-9)
6–7				SAND, fine, SILT (5GY 6/1) greenish gray, moist, poorly sorted, with red mottling, minor mica and rootlets.	SM		
7				Total depth 7.0 ft BGL			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB-9	ENGINEERING-SCIENCE, INC.
PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 - Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 34
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 7.0' ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 892949.6566	DRILLER: Jim Peterson
EAST COORDINATE: 1873611.0514	DRILLING RIG: B-61
GROUND ELEVATION: 4217.76 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 16:20 26 Oct 94 END: 17.00 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				Asphalt	NA		
				Road Base	NA		
1	☒		0.0	SAND, coarse, some GRAVEL: (10YR 4/2) dark grayish brown, dry, poorly sorted, with 20% subangular to well rounded pebbles from <10mm to 4cm.	SP		
3	☒	☒	0.0				
4				SAND, coarse, and GRAVEL: (10YR 4/2) dark grayish brown, dry, poorly sorted, with 60% subangular to well rounded pebbles from <10mm to 4cm.			SAMPLE ID: UANG-S1-SB9 (3-5)
5	☒	☒	0.0	CLAY, some SILT (2.5Y 6/2) light brownish gray, wet, with 10% small pebbles and some coarse sand.	CL		
				CLAY (2.5Y 6/2) light brownish gray, moist, hard, plastic, with red mottling.	SM		SAMPLE ID: UANG-S1-SB9 (5-7)
				SAND, very fine, some SILT (2.5Y 6/2) light brownish gray, wet, with red mottling.	CL		
				CLAY, moist, hard, with red mottling.	SW		
				SAND, fine, wet, well sorted, minor mica.			
				Total depth 7.0 ft BGL			

Depth scale: 1–21 feet

Log of Soil Boring: SB-10	ENGINEERING-SCIENCE, INC.
PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 1 – Former Pesticide Dump
PROJECT NUMBER: UT014	REF. LOGBOOK: 8 pg 34
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 7.0' ft-BGL
LOGGED BY: A. Graves	DRILLING CONTRACTOR: P C Exploration
NORTH COORDINATE: 893003.7006	DRILLER: Jim Peterson
EAST COORDINATE: 1873605.5886	DRILLING RIG: B-61
GROUND ELEVATION: 4217.40 ft-MSL	DRILLING METHOD: 4.25" ID. Hollow Stem Auger
DRILLING BEGIN: 17:10 26 Oct 94 END: 18:30 26 Oct 94	SAMPLING METHOD: 2.50" ID X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				Asphalt	NA		
1				Road Base	NA		
1–3	X	X	1.9	CLAY, some SILT: (5Y 6/2) light olive gray, moist, plastic, thinly laminated, grading to (2.5Y 6/2) light grayish brown, red mottling.	CL		SAMPLE ID: UANG-S1-SB10 (1-3)
3–4	X	X	1.9				SAMPLE ID: UANG-S1-SB10 (3-5)
5				Total depth 5.0 ft BGL			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

Site 2 - Waste POL Fuel Spill

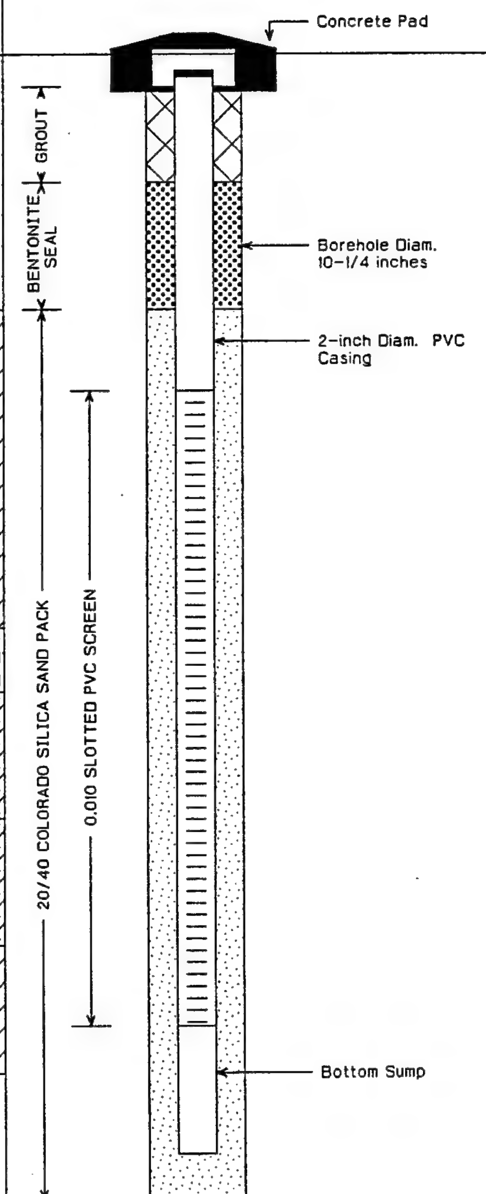
Log of Monitoring Well: S2MW1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2. PG.85
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893208.7959
GROUND ELEVATION: 4217.43 ft-MSL	EAST COORDINATE: 1873643.1380
WELL DEPTH: 17.27 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 4.77 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4212.87 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/22/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4217.16 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 18.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/14/93	END COMPLETION: 01/14/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1				SAND, and SILT, trace GRAVEL and CLAY: (5Y 3/2), dk. olive gray, soft, crumbly	SM
1			3.3	SAND, and SILT, some CLAY: (5Y 5/3), olive, mottled with (2.5Y 5/6), lt. olive brown, soft, non-plastic	
3			0.0		
4				CLAY, little SAND: (5Y 6/2), lt. olive gray, soft, saturated @ about 5.0 ft., layered (2.5Y 5/6), lt. olive brown laminations	CL
5			7.7		
7			6.4		
9			10.1	SAND, fine, some SILT and CLAY: (5Y 5/3), olive, and (2.5Y 5/6), lt. olive brown,	ML
10				CLAY, trace SAND: (5GY 5/1), greenish gray, roots and rhizomes, gray-purple color around rhizomes	CL
11			12.1		
12				CLAY, and SAND: alternating layers of (N4/4), dark gray, sand is fine, contains mica,	CL
13			6.8		
14				CLAY, trace SAND: (5GY 5/1), greenish gray, very soft,	CL
15			7.0		
18				total depth = 18.0 ft.	

WELL DIAGRAM



FILE: S2-MW1.LOG

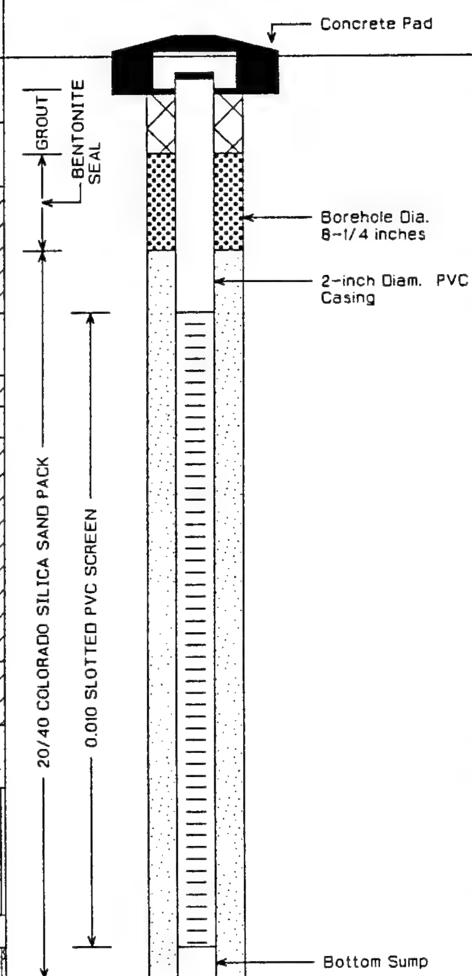
Log of Monitoring Well: S2MW2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 3, pg.3
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893219.88
GROUND ELEVATION: 4217.75 ft-MSL	EAST COORDINATE: 1873587.04
WELL DEPTH: 14.50 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 4.57 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: 4212.88 ft-MSL	DRILLER: Russ Werner
DATE MEASURED: 8/28/95	DRILLING RIG: CME 75
TOC ELEVATION: 4217.45 ft-MSL	DRILLING METHOD: 4 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 14.5 ft-BGL	SAMPLING METHOD: 3 in. ID CME core
BEGIN COMPLETION: 8/15/95	END COMPLETION: 8/15/95

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–1				Topsoil	NA	
1–2				SILT: (5Y 7/3), pale yellow, hard, dry,	ML	
2–4			0.0	SAND, and CLAY: (5Y 5/3), olive, soft, semi-plastic, moist, mica	SC	
4–5				SAND, fine, some CLAY: (5Y 5/2), olive gray, v. moist to saturated, soft, thin bedded parting (2.5Y 4/2) dk. grayish brown,	SW	
5–5.5				CLAY: (5Y 5/2), olive gray, soft, organic matter	CL	
5.5–6				SAND, fine to med: (5Y 6/3), p. olive,	SW	
6–9.5			0.0	SAND, fine, and CLAY: (5Y 5/2), olive gray	SC	
9.5–10.5				CLAY: (5Y 5/3) olive, soft	CL	
10.5–11.5				SAND, fine to med: (5Y 5/6), olive, soft, loose	SW	
11.5–13.5			33.4	CLAY: (5GY 5/1), greenish gray, soft, non-plastic, organic, roots	CL-OL	
13.5–14				SILT, some fine SAND: (N4/4), dk. gray, mica	ML	
14–14.5				CLAY: (N3/3), v. dk. gray, sulfur smell, organic	OL	
				Total depth = 14.5 ft.		

WELL DIAGRAM



FILE: S2-MW2.LOG

Log of Soil Boring: SB1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 17
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 7.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893164.48	DRILLER: Steve Mott
EAST COORDINATE: 1873630.49	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4218.03 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/02/92 @ 1445 END: 12/02/92 @ 1530	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.3				ASPHALT:	NA		
0.3–1.5	X			SILT, and CLAY, some SAND: (5Y 3/2), dk. olive gray, soft, dry, non-plastic	ML		
1.5–2.5	X	■	19.6	SAND, and CLAY: (5G 5/1), greenish gray, soft, damp, mica	SC		ID: UANG-S2-SB1 (0.5-2.5) Headspace @ 2.00 ft
2.5–4.5	X		30.6	SILT, and SAND, some CLAY: (5G 5/1), greenish gray, mica grains, moist, non-plastic	ML		Headspace @ 3.5 ft
4.5–5.0					NA		
5.0–7.0	X	■	NA	CLAY, some SAND, some SILT: (5G 5/1), greenish gray, saturated, semi-plastic, more sand @ bottom	CL		ID: UANG-S2-SB1 (5.0-7.0) Headspace not taken PID battery dead
7.0				Total depth=7.0 ft.			

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21

FILE: S2-SB1.LOG

Log of Soil Boring: SB2

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 17
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893125.50	DRILLER: Steve Mott
EAST COORDINATE: 1873641.09	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4218.15 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/02/92 @ 1610 END: 12/02/92 @ 1645	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–1.3	X		NA	GRAVEL, and SAND, some CLAY: reddish brown fill material	GC		Not enough sample for PID
1.3–2.2	X			CLAY, and SILT: (5Y 6/2), lt. olive gray, damp, non-plastic	CL		
2.2–3					NA		
3–4.5	X	X	1.9	SILT, and SAND, some CLAY: (5Y 6/3), pale olive, soft, moist, non-plastic	ML		ID: UANG-S2-SB2 (2.5-4.5) Headspace @ 4.0 ft
4.5–6	X	X	4.1	CLAY, and SAND, some SILT: mottled (5Y 5/2), olive gray, and (10YR 4/6), dk. yellow brown, saturated @ 6.0 ft, soft, non-plastic	CL		ID: UANG-S2-SB2 (4.5-6.5) Headspace @ 5.5 ft
6–6.5					NA		
				Total depth=6.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S2-SB2.LOG

Log of Soil Boring: SB3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 19
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893165.64	DRILLER: Steve Mott
EAST COORDINATE: 1873605.26	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4217.98 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/03/92 @ 1045 END: 12/03/92 @ 1200	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–1.5			NA	GRAVEL, and SAND, some CLAY: fill material	GC		No sample collected
1.5–2.5					NA		
2.5–3				SAA	GC		
3–6			957	CLAY, and SILT, little SAND: (5G 5/1), greenish gray, moist, odor, semi-plastic	CL		ID: UANG-S2-SB3 (2.5-4.5) Headspace @ 3.25 ft
			45				ID: UANG-S2-SB3 (4.5-6.5) Headspace @ 5.75 ft Collected duplicate-UANG-S2-SB3 (6.5-8.5)
6–6.5					NA		
				Total depth=6.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S2-SB3.LOG

Log of Soil Boring: SB4

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 54
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft–BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893170.39	DRILLER: Steve Mott
EAST COORDINATE: 1873571.21	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4217.72 ft–MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Augers
DRILLING BEGIN: 12/17/92 @ 1050 END: 12/17/92 @ 1140	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
0.5–1				CLAY, and SAND, some SILT: (2.5Y 5/3), lt. olive brown, moist, soft, non-plastic	CL		
1–4.5			38.8	CLAY, and SAND: mottled (5Y 5/3), olive, and (2.5Y 6/6), olive yellow, soft, non-plastic, moist, saturated at bottom	CL		Headspace @ 2.0 ft
			47.7				Headspace @ 3.50 ft
4.5–6.5		X	33.3	CLAY, some SAND: (5Y 5/3), olive, and olive yellow, soft, saturated,	CL		ID: UANG-S2-SB4 (4.5-6.5) Headspace @ 5.50 ft
6.5				Total depth=6.5 ft.			

Depth scale: 1–21 ft.

Log of Soil Boring: SB5

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 69
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893163.74	DRILLER: Dave Mott
EAST COORDINATE: 1873658.30	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4218.14 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/30/92 @ 1500 END: 12/30/92 @ 1535	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
				GRAVEL, and SAND: fill material	GC		
1–2			0.0	SILT, and SAND, fine, trace CLAY: (2.5Y 3/2), v. dk. grayish brown	SM		Headspace @ 1.5 ft
2.5–5.5			0.0	SAND, fine, trace SILT: (2.5Y 5/4), lt. olive brown,	SM		Headspace @ 3.50 ft
			0.0				Headspace @ 5.50 ft
5.5–8.25				CLAY: (5Y 6/3), pale olive, moist, plastic	CL		
			4.5				ID: UANG-S2-SB5 (6.5-8.5) Headspace @ 7.5 ft
8.25–8.5				SAND, coarse: (2.5Y 5/6), lt. olive brown	SW		Sample intervals not recorded
				Total depth=8.5 ft.			

Depth scale: 1–21 ft

FILE: S2-SB5.LOG

Log of Soil Boring: SB6

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 2, Waste POL Fuel Spill
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 70
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893187.17	DRILLER: Dave Mott
EAST COORDINATE: 1873633.19	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4218.08 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/30/92 @ 1540 END: 12/30/92 @ 1615	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				CONCRETE:	NA		
0.5–1				GRAVEL, and SAND: fill material	GC		
1–2.5			0.0	SILT, and SAND, fine, trace CLAY: (2.5Y 3/2), v. dk. grayish brown	SM		Headspace @ 1.5 ft
2.5–5			0.0	SAND, fine, trace SILT: (2.5Y 5/4), lt. olive brown, moist	SM		Headspace @ 3.50 ft
5–8			0.4	CLAY: (5Y 6/3), pale olive, moist, plastic	CL		Headspace @ 5.50 ft
			1.6				ID: UANG-S2-SB6 (6.5-8.5) Headspace @ 7.5 ft
8–8.5				SAND, fine to coarse: (2.5Y 5/6), lt. olive brown	SW		Sample intervals not recorded
				Total depth=8.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

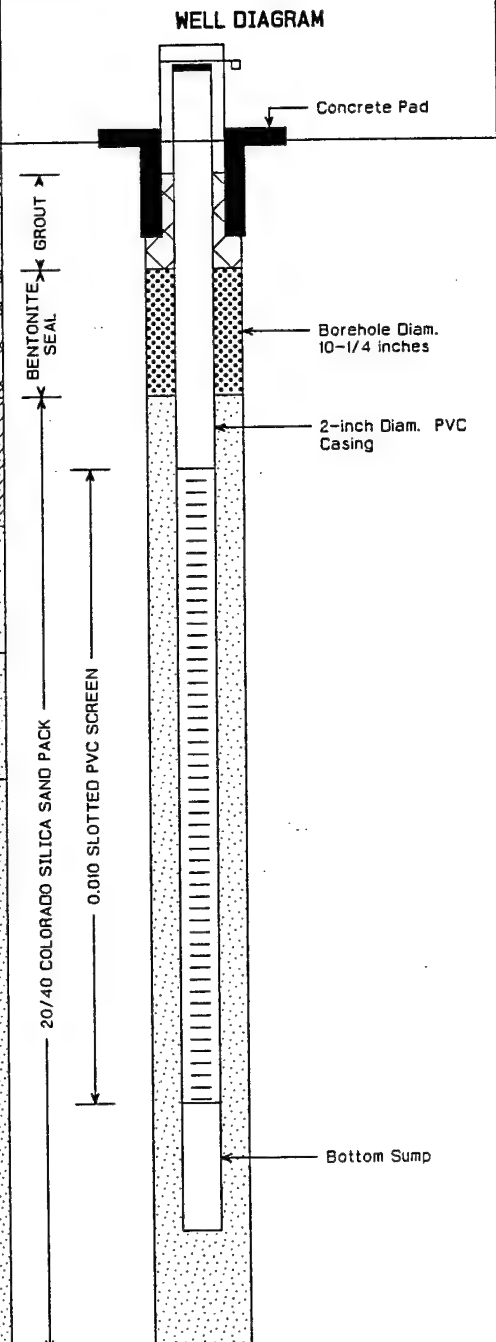
Site 3 - Drum Burial Locations

Log of Monitoring Well: S3MW1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg.78
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 896580.9640
GROUND ELEVATION: 4213.16 ft-MSL	EAST COORDINATE: 1874095.4623
WELL DEPTH: 17.13 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 3.51 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4212.15 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4215.43 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 19.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/07/93	END COMPLETION: 01/07/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–1				SAND and GRAVEL, some SILT: (10YR 5/4) yellowish brown, fill material	GM	
1–2			31.3	SAND, and SILT: (5Y 4/2), olive gray, soft	SM	
2–2.5				SILT: (5Y 2.5/1), black, organic, shells, soft	OL	
2.5–4			20.3	SILT, and CLAY: (5Y 3/1), v. dk. gray, organic, shells, soft	OL	
4–6			21.1	CLAY, and SILT: (5Y 5/2), olive gray, firm, non-plastic, saturated @ bottom of spoon sample, moist, non-plastic	CL	
6–8			27.4	SILT, and SAND, fine: grades to sand @ bottom, (5Y 5/2), olive gray and (10YR 5/6), yellowish brown, (10YR 3/3) dk. brown modules	SM	
8–10			NA	SAND, coarse: (5Y 5/1), gray, granitic minerals	SP	
10–19				CUTTINGS: SAND, coarse, SAA CLAY @ 19 feet	SP	
19				Total depth = 19.0 ft.		



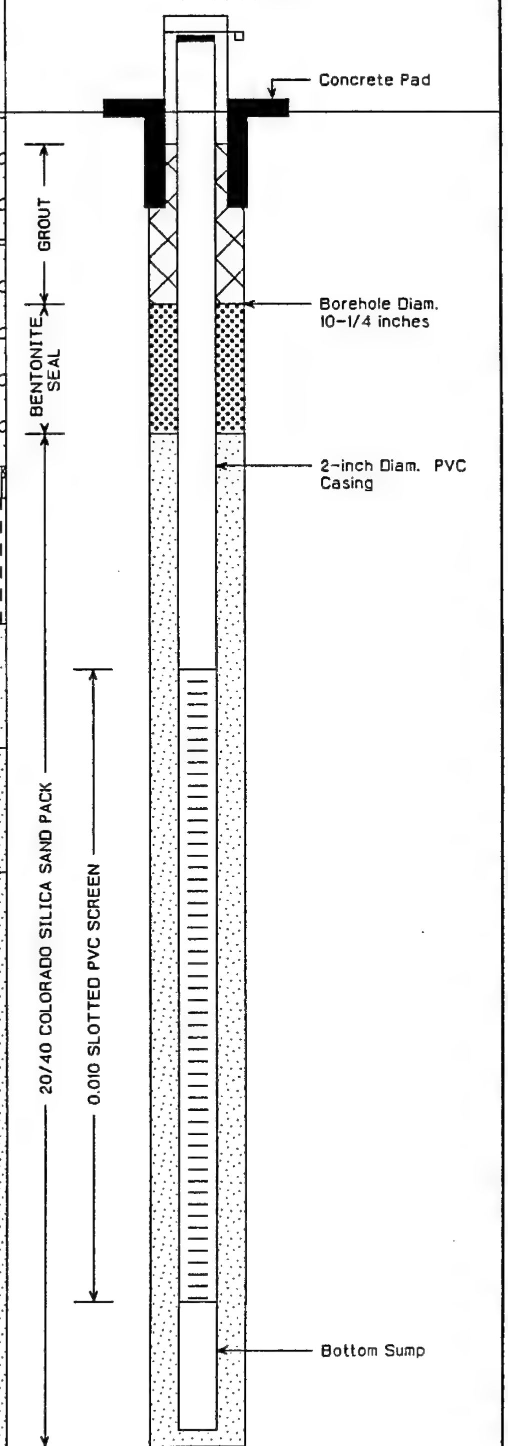
Log of Monitoring Well: S3MW2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg.92
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 896486.6118
GROUND ELEVATION: 4216.25 ft-MSL	EAST COORDINATE: 1874122.0678
WELL DEPTH: 20.74 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 7.53 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4211.95 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4218.71 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 21.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/19/93	END COMPLETION: 01/20/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–2			0.0	SAND and GRAVEL, some SILT: (2.5YR 4/2) dk. gray brown, some asphalt chunks, moist	GM	
2–5.5			0.0 / 0.8	SAND, and GRAVEL: (2.5Y 4/2), dk. gray brown, fill material, dry beginning @ 3.0 ft	GM	
5.5–6				SILT, (5Y 2.5/1), black, organic, shells, soft	OL	
6–8			0.5	SILT, some CLAY: (2.5Y 6/2), lt. brown gray, soft, non-plastic moist, (2.5Y 5/6), lt. olive brown discolored areas	ML	
8–10			0.6	SILT, and SAND, fine: (5Y 5/2) olive gray, with (2.5Y 5/6), lt. olive brown-iron oxide stains, mica	SM	
10–12			0.7	SAND, coarse: (5Y 5/1), gray, loose, quartz, biotite, muscovite, feldspar, and ferromagnesium silicate minerals-granitic origin, saturated	SP	
12–21				CUTTINGS: SAND, coarse,	SP	
21				Total depth = 21.0 ft.		

WELL DIAGRAM



FILE: S3-MW2.LOG

Log of Soil Boring: SB1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 55
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 896522.63	DRILLER: Steve Mott
EAST COORDINATE: 1874101.71	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4213.49 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/17/92 @ 1410 END: 12/17/92 @ 1520	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1.5				SAND, and GRAVEL, some SILT: brown	GM		
1.5–2			118	SILT, and SAND: (5Y 4/2), olive gray and (5Y 2.5/1), black firm, crumbly, damp	ML		Headspace @ 1.75 ft
2–3.5				SILT and CLAY: (5Y 2.5/1), black, organic, firm, crumbly, damp, odor	OL		
3.5–5.5			151	SILT and CLAY: (5Y 3/1), v. dk. gray, damp, odor	OL		Headspace @ 3.5 ft
5		☒	176				ID: UANG-S3-SB1 (4-6) Headspace @ 5.0 ft
5.5–6				CLAY: (5GY 4/1), dk. greenish gray, soft, very moist, semi-plastic. shell fragments	CL		
6–7.8				CLAY: (5Y 5/2), olive gray, soft, saturated, shell fragments	CL		
7		☒	32				ID: UANG-S3-SB1 (6-8) Headspace @ 7.0 ft
7.8–8				SAND: Coarse, (5Y 4/1), dk. gray, well sorted, subrounded, loose	SP		
8				Total depth=8.0 ft.			

Log of Soil Boring: SB2

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: Ut014	REF. LOGBOOK: 2, pg. 56
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 896520.08	DRILLER: Steve Mott
EAST COORDINATE: 1874137.17	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4213.36 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/17/92 @ 1530 END: 12/17/92 @ 1610	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2.5			24	SAND, and GRAVEL, and CLAY: (10YR 4/4), dk. yellowish brown, then (5Y 3/2), dk. olive gray, and (5Y 2.5/1), black, fill material	GC		Headspace @ 2.00 ft
2.5–4			9	SILT, and CLAY: (5Y 3/1), v. dk. gray, crumbly, soft, roots, damp	OL		Headspace @ 3.5 ft
4–5				CLAY, and SILT: (5Y 3/2), dk. olive gray, soft, organic, moist	CL		
5–6			74.8	CLAY, and SILT: (5Y 6/3), pale olive, crumbly, moist	CL		ID: UANG-S3-SB2 (4.5-6.5) Headspace @ 5.5 ft Collected MS and MSD
6–6.5				CLAY, and SILT, some SAND: (5Y 4/1), dk. gray, soft, sand @ bottom	CL		
				Total depth=6.5 ft.			

Depth scale: 1–21 ft

FILE: S3-SB2.LOG

Log of Soil Boring: SB3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: Ut014	REF. LOGBOOK: 2, pg. 56
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 896405.67	DRILLER: Steve Mott
EAST COORDINATE: 1874351.77	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4213.51 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/17/92 @ 1630 END: 12/17/92 @ 1710	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2			10.7	SAND, and GRAVEL, some CLAY: (2.5Y 4/2), dk. grayish brown, fill material	GC		Headspace @ 1.50 ft
2–3.5			15	SAND, and SILT, some GRAVEL: (2.5Y 3/2), v. dk. grayish brown, soft	SM		Headspace @ 2.75 ft
3.5–4				SILT, and CLAY, trace GRAVEL: (5Y 5/3), olive, and (5Y 2.5/1), black, soft, moist	ML		
4–5.8			20.9	SILT, and CLAY: (5Y 2.5/1), black, organic, soft, moist, no shells	OL		ID: UANG-S3-SB3 (4-6) Headspace @ 5.0 ft
5.8–6				CLAY, and SAND: (5Y 5/3), olive, soft, moist	CL		Collected duplicate-UANG-S3-SB3 (6-8)
				Total depth=6.0 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S3-SB3.LOG

Log of Soil Boring: SB4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 58
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 896580.33	DRILLER: Steve Mott
EAST COORDINATE: 1874125.37	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4212.78 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/18/92 @ 1410 END: 12/18/92 @ 1520	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2				DEBRIS: Asphalt, etc, no recovery	NA		
2–3	X			SILT, and CLAY, trace of GRAVEL: (5Y 3/1), v. dk. gray, soft, moist, organic, roots, non-plastic	OL		
3–4	X		130	CLAY, and SILT, trace SAND and GRAVEL: (5Y 4/1), dk. gray, soft	CL		Headspace @ 3.00 ft
4–6	X		NA	CLAY, and SILT, trace GRAVEL: (5Y 5/2), olive gray, soft, odor, slightly plastic	CL		Headspace @ 5.0 ft
6–8	X	X	NA	CLAY, and SILT, some SAND: (5Y 5/3), olive, and zones of (2.5Y 4/4), olive brown, some mica, soft, non-plastic	CL		ID: UANG-S3-SB4 (6-8) Headspace @ 7.0 ft
8				Total depth=8.0 ft.			
9							PID not functioning properly-H20 vapor rise

Log of Soil Boring: SB5

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 3, Drum Burial Locations
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 69
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.0 ft–BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 896543.09	DRILLER: Dave Mott
EAST COORDINATE: 1874073.97	DRILLING RIG: Mobile B–57
GROUND ELEVATION: 4213.53 ft–MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Augers
DRILLING BEGIN: 12/30/92 @ 1400 END: 12/30/92 @ 1450	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2			0.0	FILL	GC		
2–3				SILT, and CLAY: (2.5Y 3/2), v. dk. grayish brown, moist to dry, shell fragments, semi-plastic	OL		
3–4			0.0	CLAY, and SILT: (2.5Y 6/3), lt. yellowish brown, plastic, moist to dry	CL		
4–8			0.0 0.0	SAND, fine, and SILT, trace GRAVEL: (2.5Y 6/3), lt. yellowish brown, moist	SM		ID: UANG-S3-SB5 (4-6) Analytical sample interval not recorded
8				Total depth=8.0 ft.			

Depth scale: 1–21 ft.

FILE: S3-SB5.LOG

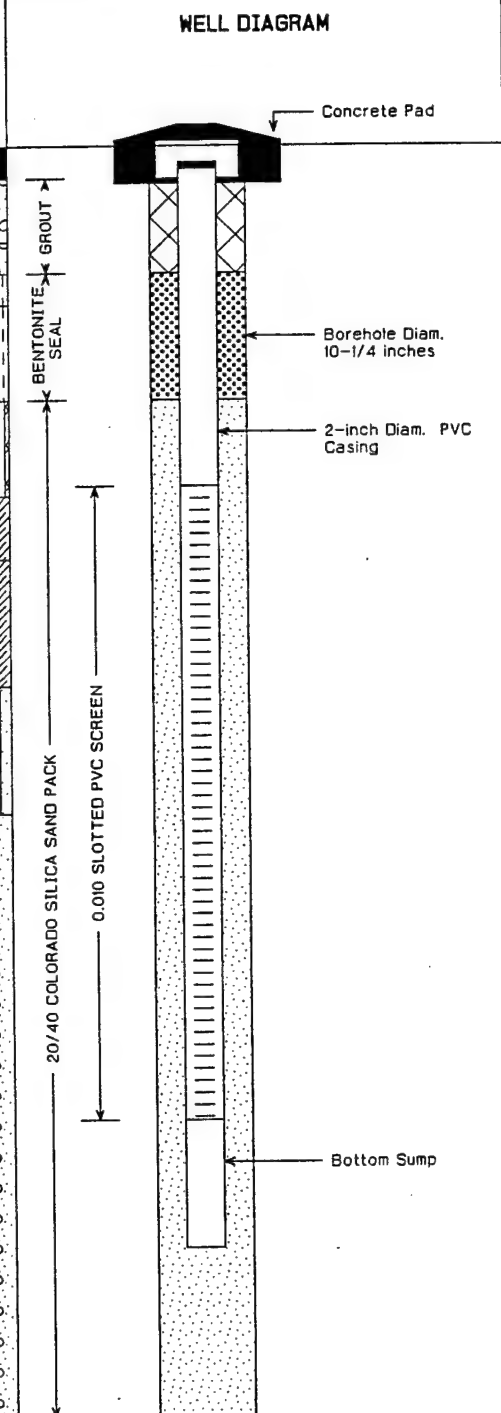
Site 4 - Fire Training Area 1

Log of Monitoring Well: S4MW1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg.75
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895267.9446
GROUND ELEVATION: 4214.41 ft-MSL	EAST COORDINATE: 1874350.6717
WELL DEPTH: 17.35 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.97 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4210.18 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4214.06 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 20.0 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/06/93	END COMPLETION: 01/07/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0				ASPHALT	NA
1	X			SAND, and GRAVEL, some SILT: (10YR 5/3), brown, fill material	GM
2	X		34	SAND, and GRAVEL, some SILT: (5Y 4/2), olive gray	GM
				SILT, and CLAY: (5GY 6/1), greenish gray, soft	ML
3	X			SILT, and CLAY, trace SAND: (5Y 6/2), lt. olive gray, mottled with (5GY 6/1), greenish gray, moist	ML
4	X		9.7	SILT: (5Y 2.5/1), black, organic, shells, soft	OL
6	X		51.6	CLAY, and SILT: (5Y 4/1), dk. gray, to (5Y 5/2), olive gray, soft, moist	CL
7					CL
8	X		27.2	CLAY, and SILT: (5Y 6/3), pale olive, with (2.5Y 5/6), lt. olive brown, saturated, soft	
9	X			SAND, fine, and SILT: (5Y 5/1), gray, soft, mica, saturated	SM
10			42.8		
10.5				CUTTINGS: SAND,	SW
20				Total depth = 20.0 ft. Clay @ 20 ft	



Log of Soil Boring: SB1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 23
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895163.41	DRILLER: Steve Mott
EAST COORDINATE: 1874386.03	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.95 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Augers
DRILLING BEGIN: 12/04/92 @ 1350 END: 12/04/92 @ 1450	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	COMMENTS
0		ASPHALT:	NA	
0.5–1.5		GRAVEL: fill material	GC	
1.5–3.5		SILT, and CLAY: (5G 5/1), greenish gray, soft, damp, crumbly, semi-plastic	ML	
3.5–6.5	44	SILT, and CLAY: (5Y 3/1), v. dk. gray, organic, gastropod shells, soft, damp, reducing environment	OL	ID: UANG-S4-SB1 (2.5-4.5) Headspace @ 3.50 ft
	370			Headspace @ 5.0 ft
6.5–7			NA	
7–8.75	40	SILT, and CLAY: (5Y 4/1), dk. gray, soft, saturated @ 8.0 ft,	ML	ID: UANG-S4-SB1 (6.5-9.0) Headspace @ 8.0 ft
8.75–9		SAND, fine: (5Y 4/1), dk. gray,	SW	
9		Total depth=9.0 ft.		

Log of Soil Boring: SB2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 25
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895188.09	DRILLER: Steve Mott
EAST COORDINATE: 1874359.80	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.85 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/07/92 @ 0925 END: 12/07/92 @ 1030	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				ASPHALT:	NA		
					NA		
1				GRAVEL: fill material	GC		No sample collected
2				SILT, and CLAY: (5G 5/2), grayish green w/ black streaks, soft, damp, non-plastic	ML		
3–4		X	1123				ID: UANG-S4-SB2 (2.5-4.5) Headspace @ 3.50 ft
4				SILT, and CLAY: (5Y 2.5/1), black, organic, gastropod shells, roots, soft, damp, non-plastic, reducing environment	OL		
5			0.0				Headspace @ 5.0 ft
5.5				SILT, and CLAY: (5Y 4/1), dk. gray, soft, moist, more silt @ the bottom of the interval	ML		
6.5				SAND, fine, and SILT: (5Y 4/1), dk. gray, loose, mica, saturated	SM		ID: UANG-S4-SB2 (6.5-9.0)
7		X	0.0				Headspace @ 7.0 ft
9				Total depth=9.0 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S4-SB2.LOG

Log of Soil Boring: SB3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 26
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895192.26	DRILLER: STeve Mott
EAST COORDINATE: 1874408.32	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.86 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/07/92 @ 1050 END: 12/07/92 @ 1150	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
1					NA		
2				GRAVEL: fill material	GC		No sample collected
3				SAND, and SILT: (5Y 4/2), olive gray,	SM		
3.5		☒	2.0	SILT, and SAND: (5Y 2.5/1), black,	ML		ID: UANG-S4-SB3 (2.5-4.5) Headspace @ 3.50 ft
4				CLAY, and SILT: (5G 5/1), greenish gray, soft, damp, non-plastic	CL		
5				SAND, fine, and SILT: (5Y 3/1), v. dk. gray, soft, damp	SM		
5.5			9.2	SILT, some CLAY: (5Y 2.5/1), black, organic, shells, soft, non-plastic	OL		Headspace @ 5.5 ft
6				CLAY, and SILT, some SAND: (5Y 4/1), dk. gray, soft, damp, non-plastic	CL		
7		☒	0.0	SAND, fine, and SILT: (5Y 5/1), gray, and (5Y 5/2), olive gray, at the bottom of the interval, soft, loose, iron oxide stains, saturated @ 8.0 ft.,	SM		ID: UANG-S4-SB3 (6.5-9.0) Headspace @ 7.5 ft
9				Total depth=9.0 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S4-SB3.LOG

Log of Soil Boring: SB4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 26
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895219.43	DRILLER: Steve Mott
EAST COORDINATE: 1874383.54	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.70 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/07/92 @ 1340 END: 12/07/92 @ 1435	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
					NA		
1				GRAVEL: fill material	GC		No sample collected
2				SILT: (5Y 3/1), v. dk. gray, soft,	ML		
					NA		
3		X	10	SILT, and CLAY: (5Y 3/2), dk. olive gray, mottled with (5G 5/2), gray green, very soft, moist, plastic	ML		ID: UANG-S4-SB4 (2.5-4.5) Headspace @ 3.50 ft
4				SILT: (5Y 2.5/1), black, organic, shells, soft, moist, non-plastic	OL		
5				SILT: (5Y 5/1), gray, moist, non-plastic	ML		
6			5.0				Headspace @ 6.0 ft
7				SAND, fine, and SILT: (5Y 4/1). dk. gray, soft, mica, moist to saturated	SM		
8		X	8.1				ID: UANG-S4-SB4 (6.5-9.0) Headspace @ 8.0 ft
9				Total depth=9.0 ft.			Collected duplicate sample UANG-S4-SB4 (9-11)

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21

FILE: S4-SB4.LOG

Log of Soil Boring: SB5	ENGINEERING-SCIENCE, INC.
PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 47
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 7.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895137.22	DRILLER: Steve Mott
EAST COORDINATE: 1874388.31	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.01 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/15/92 @ 1345 END: 12/15/92 @ 1415	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1				ASPHALT:	NA		
1–1.5					NA		
1.5–3			2.5	CLAY, some SILT: (5Y 6/3), pale olive, dry, soft to firm, non-plastic, some (5Y 3/1), v. dk. gray inclusions	CL		Headspace @ 2.00 ft
3–4				SILT: (5Y 2.5/1), black, organic, gastropod shells, soft, damp, non-plastic	OL		
4–5			3.4	CLAY, some SILT: (5Y 6/2), lt. olive gray, soft, med plasticity, saturated @ 4.5 feet	CL		Headspace @ 4.0 ft
5–7			10.7	CLAY, and SILT, some SAND: (5Y 4/1), dk. gray, shells, soft, non-plastic	CL		ID: UANG-S4-SB5 (5-7) Headspace @ 6.0 ft Collected duplicate sample UANG-S4-SB5 (7-9)
7				Total depth=7.0 ft.			

Log of Soil Boring: SB6

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 48
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895191.14	DRILLER: Steve Mott
EAST COORDINATE: 1874316.50	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.49 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/15/92 @ 1420 END: 12/15/92 @ 1510	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–1	X			GRAVEL, and SAND: fill material	NA		
1–2.5	X		8.0	CLAY, and SILT: (5Y 6/2), lt. olive gray, soft, crumbly, zones that are cohesive, damp	CL		Headspace @ 1.5 ft
2.5–3.5	X			CLAY, and SILT: (5Y 5/2), olive gray, mottled with (5Y 4/1), dk. gray, soft, moist,	CL		
3.5–4	X	X	137	SILT: (5Y 2.5/1), black, organic, shells, soft, moist, non-plastic	OL		ID: UANG-S4-SB6 (2.5-4.5) Headspace @ 3.50 ft
4–4.5	X			CLAY, and SILT: (5Y 4/1), dk. gray, moist, crumbly, shells	CL		
4.5–6.5	X		43.3	CLAY, and SAND, some SILT: (5Y 4/1), dk. gray, soft, crumbly, saturated, 3 in. GRAVEL zone @ 5.0 ft.	CL		Headspace @ 5.5 ft
6.5–8.5	X	X	3.4	SAND, fine, and CLAY: (5Y 5/2). olive gray, soft, saturated	SC		ID: UANG-S4-SB6 (6.5-8.5) Headspace @ 7.5 ft
8.5				Total depth=8.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB7

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 49
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 10.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895188.84	DRILLER: Steve Mott
EAST COORDINATE: 1874380.48	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.77 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/15/92 @ 1625 END: 12/15/92 @ 1700	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
0.5–2	X			GRAVEL, and SAND: fill material	GC		
2	X		75	SILT, and CLAY: (5Y 4/1), dk. gray, soft, damp,	ML		Headspace @ 2.00 ft
2.5–4	X			CLAY: (5GY 5/1), greenish gray, firm, moist, non-plastic	CL		
4	X		710	SILT: (5Y 2.5/1), black, organic, shells,	OL		Headspace @ 4.00 ft
4.5–6.5	X	X	1705	CLAY, and SAND, some SILT: (5Y 5/1), gray, soft, crumbly, odor, saturated @ 5 ft to 6 ft	CL		ID: UANG-S4-SB7 (4.5-6.5) Collected MS and MSD Headspace @ 6.0 ft
6.5–8.5				CUTTINGS:	NA		No sample collected
8.5–10.5	X		59.1	SAND, fine, some SILT: (5Y 4/1), dk. gray, soft, mica, saturated	SW		Headspace @ 10.0 ft
10.5				Total depth=10.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB8

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 67
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895194.56	DRILLER: Dave Mott
EAST COORDINATE: 1874294.42	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4214.58 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/29/92 @ 1345 END: 12/29/92 @ 1450	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.1				ASPHALT:	NA		
0.1–1.5	X		494	GRAVEL, and SAND: fill material	GC		ID: UANG-S4-SB8 0.5-2.5) Headspace @ 1.50
1.5–3.3	X			CLAY, and SILT: (5Y 5/2), olive gray, and (5YR 5/4), reddish brown, plastic, moist	CL		Headspace @ 3.50 ft
3.3–4.3	X		88.3	SILT, some CLAY: (5Y 3/1). v. dk. gray, dry, slighly plastic	ML		
4.3–6.3	X		94.1	SILT, and CLAY, trace GRAVEL: (5Y 5/1), gray, moist, plastic,	ML		ID: UANG-S4-SB8 (4.5-6.5) Headspace @ 5.5 ft
6.3–8.5	X		2.0	SAND, fine to coarse, some SILT: (5Y 4/3), olive,	SM		Headspace @ 7.5 ft Sample intervals not recorded
				Total depth=8.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB9

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 4, Fire Training Area 1
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 67
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895226.37	DRILLER: Dave Mott
EAST COORDINATE: 1874347.50	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4214.50 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/29/92 @ 1515 END: 12/29/92 @ 1550	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–1.5				SAND, coarse: washed sand fill material	GC		
1.5–2.5			0.0	SILT, and SAND, some CLAY: (10 YR 4/3), dk. brown,	SM		Headspace @ 1.50
2.5–3.5				SILT, and CLAY, trace SAND, fine: (2.5Y 5/3), lt. olive brown, moist	ML		
3.5–4.5			4.7	SILT, and CLAY: (5Y 3/1), v. dk. gray, moist	ML		ID: UANG-S4-SB9 (2.5-4.5) Headspace @ 3.50 ft
4.5–5				SAND, coarse: (5Y 3/1), v. dk. gray, saturated	SP		
5–7			0.0	SILT, some CLAY: (5Y 5/1), gray, shells, dry, non-plastic	ML		ID: UANG-S4-SB9 (4.5-6.5) Headspace @ 5.5 ft
7–8.5			0.0	CLAY, and SILT: (5Y 5/2), olive gray, moist	CL		Headspace @ 7.5 ft Sample interval not recorded
8.5				Total depth=8.5 ft.			

Site 5 - Fire Training Area 2

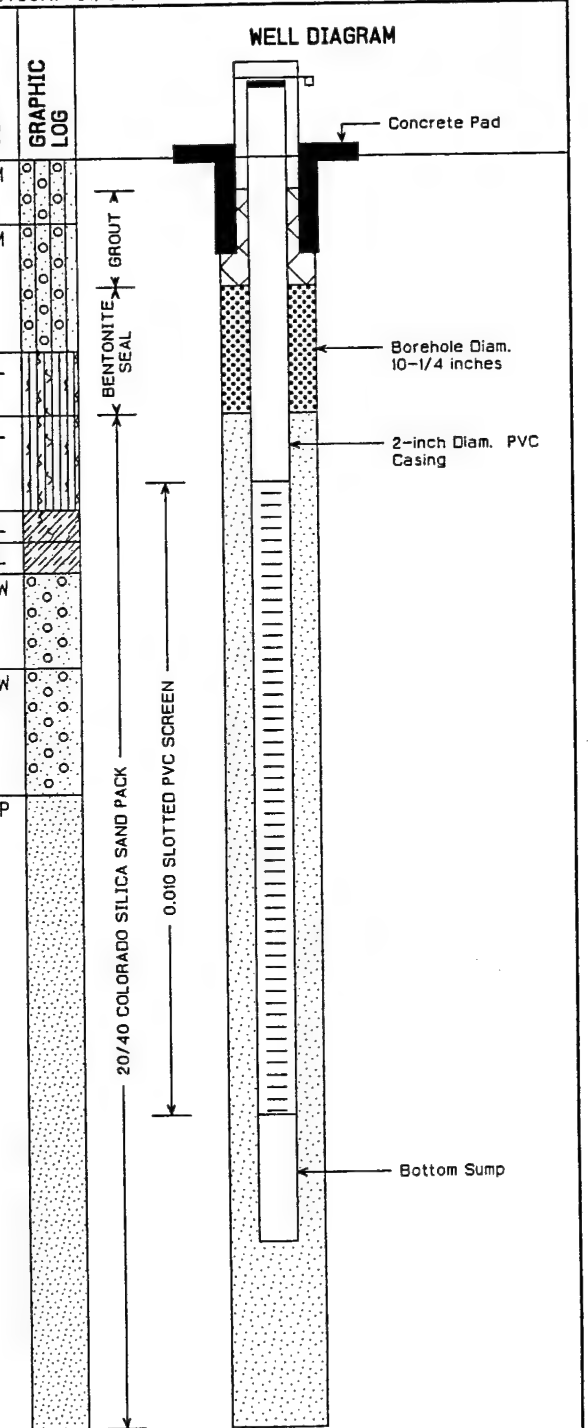
Log of Monitoring Well: S5MW1 ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 77
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895689.0174
GROUND ELEVATION: 4215.05 ft-MSL	EAST COORDINATE: 1874522.7616
WELL DEPTH: 17.08 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.09 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4210.22 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4216.47 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 20.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers
BEGIN COMPLETION: 01/07/93	END COMPLETION: 01/07/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0				SAND, some SILT: (5Y 4/2) olive gray, soft, friable, roots, topsoil	SM
1			31.3	SAND, and SILT, trace GRAVEL: (5Y 6/3), pale olive, soft	SM
3			20.3	SILT, (5Y 2.5/1), black, organic, shells, soft, crumbly	OL
4				SILT, and CLAY: (5Y 3/1), v. dk. gray, organic, shells, soft roots, non-plastic	OL
5			21.1		
5.5				CLAY, and SILT: (5Y 6/2), lt. olive gray, shells, soft, non-plastic	CL
6				CLAY, and SILT, some SAND: (5Y 6/2), lt. olive gray, soft, non-plastic	CL
6.5			27.4	SAND, fine, and SILT: (5Y 5/2), olive gray, with zones of (5GY 5/1), greenish gray, soft, saturated	SW
8			NA	SAND, same as above	SW
10				CUTTINGS: SAND, coarse, gray, granitic	SP
20				Total depth = 20.0 ft.	

GRAPHIC LOG

WELL DIAGRAM



FILE: S5-MW1.LOG

Log of Soil Boring: SB1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 27
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895709.80	DRILLER: Steve Mott
EAST COORDINATE: 1874431.82	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.85 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/07/92 @ 1540 END: 12/07/92 @ 1630	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2			0.0	SAND, some GRAVEL: (2.5Y 7/3), pale yellow, soft, more sand at the bottom of the interval, possibly non-native fill material	GM		ID: UANG-S5-SB1 (0-2) Headspace @ 1.00 ft
2–3					NA		Headspace not taken sample recovery low
3–4.5				SAND, fine, and SILT: (2.5Y 7/3), pale yellow, soft, damp, low recovery	SM		
4.5–5.5				SILT, some CLAY: (5Y 2.5/1), black, organic, soft, moist, shells	OL		
5.5–6			0.0	SILT, and SAND, fine: (2.5Y 7/2), lt. gray, very soft, roots, moist	ML		Headspace @ 5.5 ft
6–7.5			2.2	SILT, and SAND, fine: (2.5Y 5/2), gray brown, soft, moist	ML		ID: UANG-S5-SB1 (6.0-8.5) Headspace @ 7.0 ft
7.5–8.5				SAND, med, some SILT: (5Y 4/1), dk. gray, mica, iron oxide stains, saturated	SM		
				Total depth=8.5 ft.			

Log of Soil Boring: SB2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 29
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895757.40	DRILLER: Steve Mott
EAST COORDINATE: 1874424.51	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.38 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/08/92 @ 0905 END: 12/08/92 @ 1000	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring sampler

DEPTH (feet)	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	COMMENTS
0–0.5			NA	
0.5–1.8		SAND, some SILT, some CLAY, little GRAVEL: (5Y 3/2), dk. olive gray, moist, soft, surface soil, appears non-native	GC	Headspace not taken
1.8–2.8			NA	
2.8–3.5	2.2	SAND, fine, and SILT: (5Y 7/3), pale yellow, dry, soft, crumbly	SM	ID: UANG-S5-SB2 (2-4) Headspace @ 3.5 ft
3.5–4.0		SILT, some SAND: (5Y 3/2), dk. olive gray, soft, crumbly, damp, roots	ML	
4.0–4.7			NA	
4.7–5.5	5.0	SILT, some CLAY: (5Y 2.5/1), black, organic, roots, soft, damp, non-plastic, white streaks, parts into thin slices	OL	Headspace @ 5.0 ft
5.5–6.4		SILT, and CLAY: (5Y 6/2), lt. olive gray, soft, moist, crumbly, some roots, non-plastic	ML	
6.4–8.5	8.0	SAND, fine to med, some SILT: (5Y 6/2), lt. olive gray, soft, loose, mica, saturated @ 6.5 feet	SM	ID: UANG-S5-SB2 (6.0-8.5) Headspace @ 8.0 ft

Total depth=8.5 ft.

FILE: S5-SB2.LOG

Log of Soil Boring: SB3

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 29
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895805.60	DRILLER: Steve Mott
EAST COORDINATE: 1874420.15	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.18 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/08/92 @ 1020 END: 12/08/92 @ 1100	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring sampler

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1.5					NA		Headspace not taken
1.5–2.5			NA	SAND, some SILT, some CLAY, little GRAVEL: (5Y 3/2), dk. olive gray, moist, soft, surface soil, appears non-native	GC		
2.5					NA		
2.5–4.5			3.0	SAND, fine, and SILT, some GRAVEL: (5Y 6/2), pale yellow, soft, loose, asphalt chunks, non-native	SM		ID: UANG-S5-SB3 (2-4) Headspace @ 3.0 ft
4.5–5.5			2.0	SILT, some CLAY: (5Y 2.5/1), black, organic, soft, moist, shells, med-plastic, white secondary material	OL		Headspace @ 5.0 ft
5.5–7.5			1.0	SILT, and CLAY: (5Y 5/2), olive gray, soft, moist, non-plastic	ML		ID: UANG-S5-SB3 (6.0-8.5) Headspace @ 7.0 ft
7.5–8.5				SAND, fine to med, some SILT: (5Y 4/1), dk. gray, soft, loose, mica, saturated	SM		Collected duplicate sample- UANG-S5-SB3 (8.5-11.0)
8.5				Total depth=8.5 ft.			

FILE: S5-SB3.LOG

Log of Soil Boring: SB4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 30
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895849.51	DRILLER: Steve Mott
EAST COORDINATE: 1874415.78	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.85 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/08/92 @ 1110 END: 12/08/92 @ 1200	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring sampler

DEPTH (feet)	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	COMMENTS
0–1.5	5.0	SAND, some SILT, little GRAVEL: (5Y 4/2), olive gray, moist, soft,	GM	Headspace @ 0.75 ft
1.5–2		SAND, fine, some SILT: (5Y 6/3), pale olive, soft, loose	SM	
2–3.5		SAND, fine, and SILT, trace GRAVEL: (5Y 7/3), pale yellow, soft, some areas more dense	SM	
3.5–6.5	31.0 36.0	SILT, some CLAY: (5Y 2.5/1), black, organic, soft, moist, shells, roots, non-plastic,	OL	ID: UANG-S5-SB4 (2-4) Headspace @ 3.5 ft Headspace @ 4.5 ft
6.5–7.5		SILT, and CLAY: (5Y 5/2), olive gray, soft, moist, non-plastic	ML	
7.5–8.5	5.0	SAND, med, some SILT: (5Y 5/2), olive gray, soft, loose, mica, saturated	SM	ID: UANG-S5-SB4 (6.0-8.5) Headspace @ 8.0 ft
		Total depth=8.5 ft.		

Columns also present: INTERVAL RECOVERY, ANALYTICAL SAMPLE, GRAPHIC LOG. Depth scale 1–21.

Log of Soil Boring: SB5

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 97
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 7.0 ft–BGL
LOGGED BY: T. M. JENSEN	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895904.51	DRILLER: DALLAS PRILL
EAST COORDINATE: 1874411.51	DRILLING RIG: Mobile B–57
GROUND ELEVATION: 4213.30 ft–MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 02/09/93 @ 1505 END: 02/09/93 @ 1530	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1.5					NA		
1.5–2.5	X			SAND, and SILT, some GRAVEL: (2.5Y 4/2), dk. grayish brown, soft,	SM		
2.5–3.3	X	X	BG	SILT, little SAND: (5Y 2.5/1), black, organic, soft, shells, roots,	OL		ID: UANG–S5–SB5 (1–3) Headspace @ 2.50 ft
3.3–7.0	X (to 5.0); X (5.5–7.0)	X (at 7)	BG; BG	SILT, trace SAND: (5Y 4/1), dk. gray, soft, moist, some shells, saturated @ 5.5 feet to 7.0 feet			Headspace @ 3.5 ft ID: UANG–S5–SB5 (5.0–7.0) Headspace @ 6.5 ft
7.0				Total depth=7.0 ft.			BG=background levels

Log of Soil Boring: SB6

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 94
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 7.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895796.54	DRILLER: Dan Bowden
EAST COORDINATE: 1874351.21	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4215.75 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 02/08/93 @ 1225 END: 02/08/93 @ 1255	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2					NA		Began sampling @ 1 ft
2–3	X	X	0.0	SAND, and SILT, some GRAVEL: (5Y 3/2), dk. olive gray, moist, soft,	SM		ID: UANG-S5-SB6 (1-3) Headspace @ 2.50 ft
3				SAND, and SILT: (5Y 5/3), olive,	SM		
3–4			0.0		NA		Headspace @ 3.5 ft
4–5	X			SAND, and SILT, little GRAVEL: (5Y 4/3), olive, soft, crumbly, moist,	SM		
5–6					NA		
6–7	X	X	0.0	SAND, and SILT, little GRAVEL: (2.5Y 4/3), olive brown, soft	SM		ID: UANG-S5-SB6 (5.0-7.0) Headspace @ 6.5 ft
7				Total depth=7.0 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S5-SB6.LOG

Log of Soil Boring: SB7

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 5, Fire Training Area 2
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 95
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 7.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895809.37	DRILLER: Dan Bowden
EAST COORDINATE: 1874496.76	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4214.79 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 02/09/93 @ 1320 END: 02/09/93 @ 1350	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2					NA		Began sampling @ 1 ft
2–3	X	■	BG	SAND, and SILT, some GRAVEL: (2.5Y 4/2), dk. grayish brown, soft, loose	GM		ID: UANG-S5-SB7 (1-3) Headspace @ 2.50 ft
3–4			BG		NA		Headspace @ 3.5 ft
4–5	X			SAND, and SILT, some GRAVEL: (2.5Y 4/2), dk. grayish brown, loose, moist	SM		
5–6.5	X			SAND, and SILT, little GRAVEL: (5Y 3/1, v. dk. gray, soft, saturated	SM		
6.5–7		■	BG	SILT, little SAND: (2.5Y 6/2), lt. olive gray, firm, crumbly, saturated	ML		ID: UANG-S5-SB7 (5.0-7.0) Headspace @ 6.5 ft
				Total depth=7.0 ft.			BG=Background level

Site 6 - Ramp Washdown

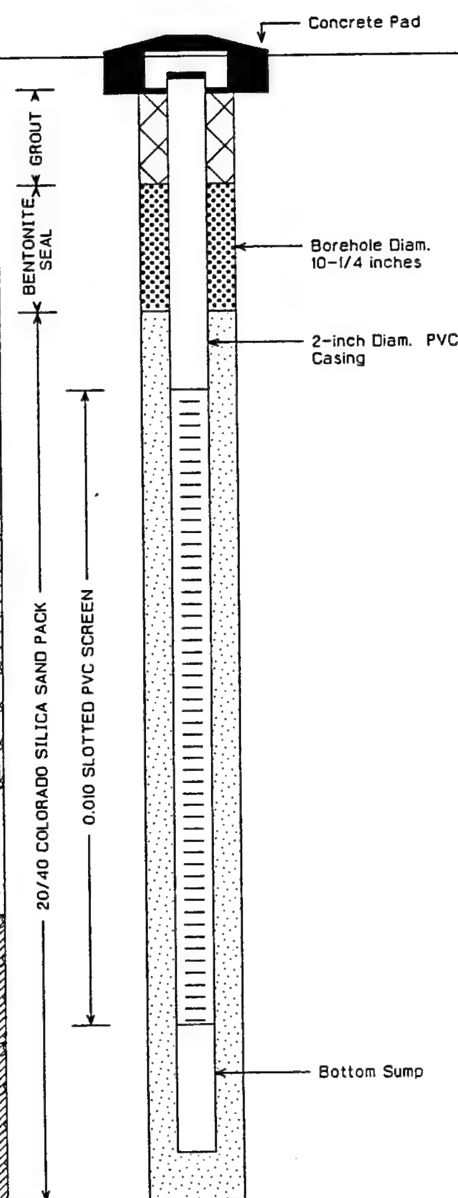
Log of Monitoring Well: S6MW1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown Area
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 87
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893297.2779
GROUND ELEVATION: 4216.92 ft-MSL	EAST COORDINATE: 1873076.2208
WELL DEPTH: 17.24 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.70 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4211.78 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4216.71 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 18.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/15/93	END COMPLETION: 01/15/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1.5				CONCRETE	NA
1.5–3.5			3.7	SAND, and SILT, some CLAY: (5Y 5/2), olive gray, soft, moist	SM
3.5–5.5			3.6	SAND and SILT, some CLAY: (5Y 5/2), olive gray, and (2.5Y 5/6), lt. olive brown, soft, saturated	SM
5.5–7.5			3.6	CLAY: (5Y 6/2), lt olive gray, soft, saturated	CL
7.5–9.5			2.7	CLAY, and SILT, some SAND: (5Y 5/1), gray, soft, saturated, some mica	ML
9.5–11.5			3.1	CLAY: (5Y 6/2), lt. olive gray, and (2.5Y 5/6), lt. olive brown, and (5Y 2.5/1), black, organic network, crumbly, soft	OL
11.5–13.5			2.9	SAND, fine, and SILT: (5Y 5/2), olive gray, and zones of (2.5Y 5/6), lt. olive brown	SM
13.5–15.5			3.3	CLAY: (N3/3), v. dark gray, soft, hydrogen sulfide smell, organic	OH
15.5–18				CUTTINGS: CLAY, same as above	OH
18				Total depth = 18.0 ft.	

WELL DIAGRAM



Log of Monitoring Well: S6MW2

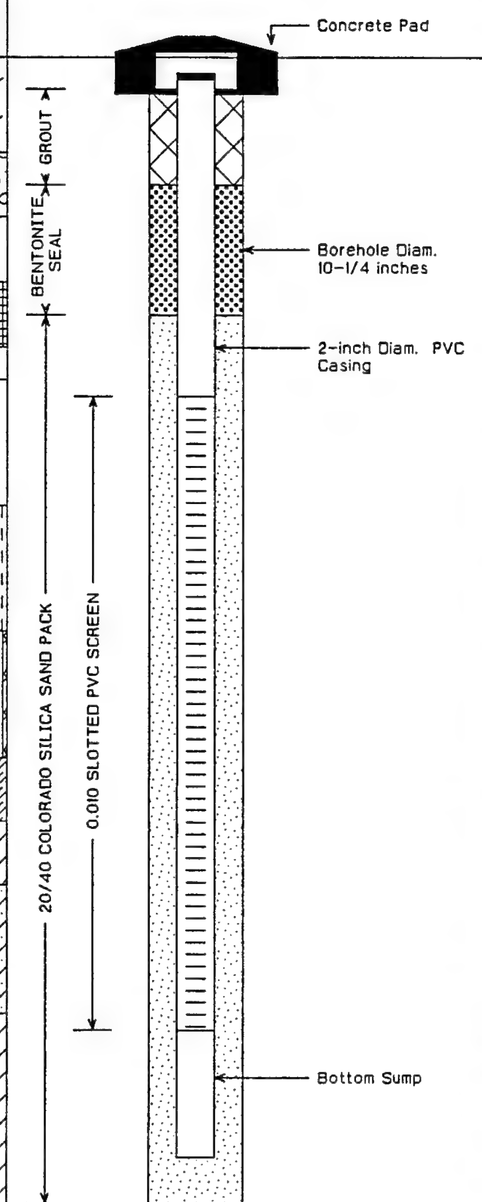
ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown Area
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 89
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 894624.7535
GROUND ELEVATION: 4216.58 ft-MSL	EAST COORDINATE: 1873082.7674
WELL DEPTH: 17.26 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 7.34 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4210.42 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4216.32 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 18.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/18/93	END COMPLETION: 01/18/93

DEPTH (feet)	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1.5		CONCRETE	NA
1.5–2.5	3.5	SAND, and GRAVEL, some SILT: (2.5Y 4/2), dk. grayish brown	GM
2.5–3.5			NA
3.5–4.5		GRAVEL, angular: (5Y 3/1), v. dk. gray, stained, possibly slag	NA
4.5–6	3.8	SILT: (5Y 6/2), lt. olive gray, soft, slightly plastic, moist	ML / ML
6–7	3.9	SILT: (5Y 5/2), olive gray, soft,	
7–9	3.9	SILT, and CLAY: (5Y 5/3), olive, with (2.5Y 5/4), lt olive brown, soft, slightly plastic, saturated	ML
9–11	4.1	CLAY, some SILT: (5Y 5/2), olive gray, w/ (2.5Y 5/6), lt. olive brown, and (5Y 2.5/1), black organic zones with shells	OL
11–12		CLAY, and SILT, trace SAND: (5Y 6/3), p. olive, soft, non-plastic	CL
12–13	4.1	CLAY: (5G 5/1), greenish gray	CL
13–15	4.1	CLAY: (N4/4), dark gray, soft, fine SAND mixed with CLAY @ 14 ft to 14.5 ft	CL
15–18		CUTTINGS: CLAY, same as above	CL
18		Total depth = 18.0 ft.	

Columns also printed: INTERVAL RECOVERY, ANALYTICAL SAMPLE, GRAPHIC LOG

WELL DIAGRAM

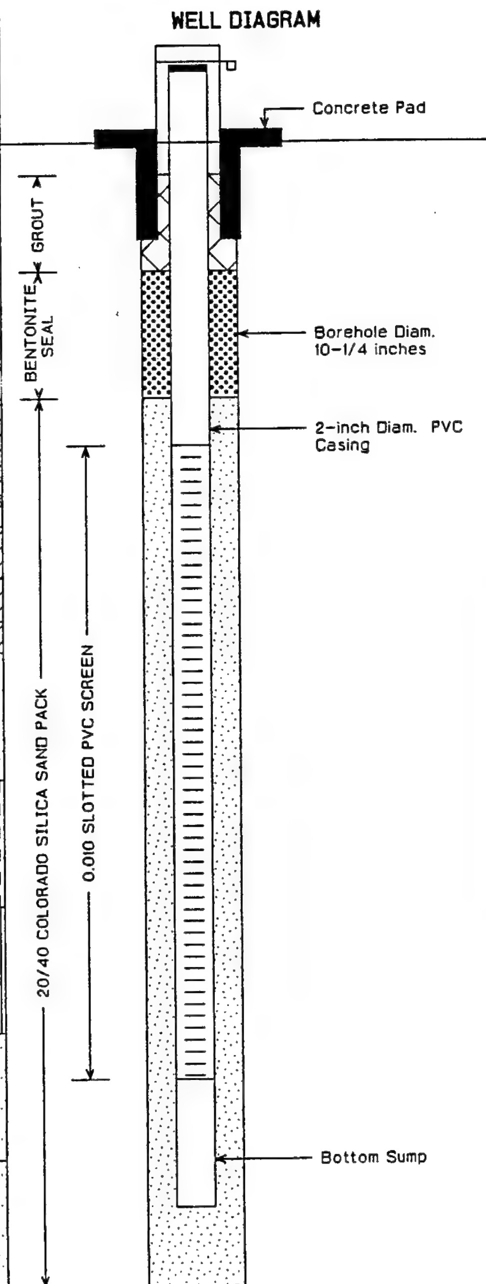


Log of Monitoring Well: S6MW3

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown Area
PROJECT NUMBER: UT014	REF. LOGBOOK: 2. pg. 90
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895411.8149
GROUND ELEVATION: 4216.89 ft-MSL	EAST COORDINATE: 1873069.1046
WELL DEPTH: 16.75 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 8.01 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4209.43 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4219.29 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 18.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/18/93	END COMPLETION: 01/18/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–2			3.7	SAND and GRAVEL, some SILT: (5Y 3/2), dk. olive gray	GM	
2–4			0.0	SILT, and CLAY, some SAND: (5Y 5/2), olive gray, and (5Y 3/1), v. dk. gray, moist	CL	
4–5.5			0.0	SILT, and CLAY, some SAND: (5Y 3/1), olive, and (5Y 5/2), olive gray, moist, non-plastic	CL	
5.5–6				SILT: (5Y 2.5/1), black, organic, shells	OL	
6–8			0.0	CLAY, and SILT: (2.5Y 6/2), lt. brown gray, non-plastic, saturated	CL	
8				CLAY, and SILT: (5Y 5/2), olive, soft, non-plastic	CL	
8–10			0.0	SAND, fine, and CLAY, some SILT: (2.5Y 5/2), gray brown, with (2.5Y 5/6), lt. olive brown, soft	SM	
10–12			0.5	SILT, some CLAY, some SAND: (5Y 5/2), olive gray, and (2.5Y 3/3), dk. olive brown, very soft, saturated	ML	
12–14			0.0	SILT, and SAND, fine: (2.5Y 4/2), dk. gray brown, soft, mica	MH	
14–16			0.0	SAND, fine: (5Y 5/1), gray, and (2.5Y 4/4), olive brown, mica	SW	
16–18				CUTTINGS: SAND, same as above	SW	
18				Total depth = 18.0 ft.		



FILE: S6-MW3.LOG

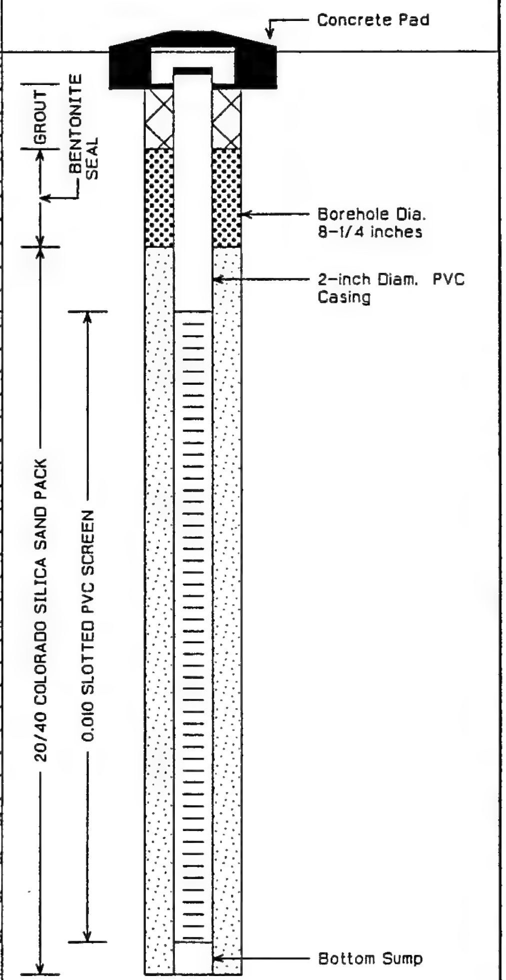
Log of Monitoring Well: S6MW4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 3, pg.4
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 893790.63
GROUND ELEVATION: 4214.86 ft-MSL	EAST COORDINATE: 1872969.02
WELL DEPTH: 14.5 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.97 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: 4208.72 ft-MSL	DRILLER: Russ Werner
DATE MEASURED: 8/24/95	DRILLING RIG: CME 75
TOC ELEVATION: 4214.69 ft-MSL	DRILLING METHOD: 4 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 14.5 ft-BGL	SAMPLING METHOD: 3 in. ID CME core
BEGIN COMPLETION: 8/17/95	END COMPLETION: 8/17/95

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–2				SAND, and CLAY: (5Y 6/2), lt. olive gray, dry	SC	
2–4			0.0	CLAY: (5Y 6/3), p. olive, soft, moist, rust staining	CL	
4–9			0.0	SAND, and CLAY: (5Y 5/3), olive, soft to firm, non-plastic, crumbly and non-cohesive, brown organic matter w/ rust staining	SC	
9–12				CLAY: (5Y 5/3), olive, soft, some 2-inch thick sand zones	CL	
12–14			0.0	CLAY: (N2/2 & N3/3) dk. gray, soft, organic	OL	
14–14.5					NA	
				Total depth = 14.5 ft.		
				Note: logged in darkness with lighting		

WELL DIAGRAM



Log of Monitoring Well: S6MW5

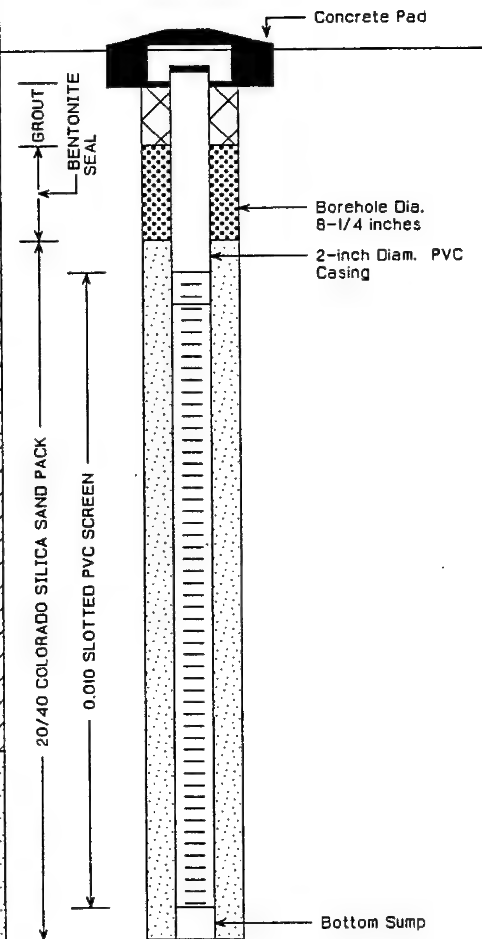
ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 3, pg.4
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 894815.41
GROUND ELEVATION: 4214.78 ft-MSL	EAST COORDINATE: 1872974.49
WELL DEPTH: 14.0 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 7.04 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: 4207.49 ft-MSL	DRILLER: Russ Werner
DATE MEASURED: 8/24/95	DRILLING RIG: CME 75
TOC ELEVATION: 4214.53 ft-MSL	DRILLING METHOD: 4 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 14.0 ft-BGL	SAMPLING METHOD: 3 in.ID. CME core
BEGIN COMPLETION: 8/17/95	END COMPLETION: 8/17/95

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0–4			0.9	SAND, and CLAY, some GRAVEL: (5Y 5/3), olive, dry to moist near bottom	SC	
4–6				CLAY, some SAND: (5Y 5/3), olive, firm, dry	CL	
6–11			1.3	SAND, some CLAY, little SILT: (5Y 5/3), olive, soft, moist to saturated	SC	
11–14			0.6	SAND, coarse, trace fines: (5Y 4/1), gray, loose, granitic origin	SP	
14				Total depth = 14.0 ft.		

Note: logged in darkness with lighting; bottom 2 ft. of annulus is natural sand formation due to sand flowing

WELL DIAGRAM



FILE: S6-MW5.LOG

Log of Soil Boring: SB1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 31
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895105.70	DRILLER: Steve Mott
EAST COORDINATE: 1872998.65	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.78 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/08/92 @ 1545 END: 12/08/92 @ 1640	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring sampler

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–1				GRAVEL, and SAND: red brown fill material	GP		
1–4.5	0.5–2.5, 3–4.5	4–4.5	8.8	SILT, and CLAY: (5Y 4/2), olive gray, soft, moist, crumbly, semi-plastic	ML		Headspace @ 1.5 ft
			14.5				ID: UANG-S6-SB1 (2.5-4.5) Headspace @ 4.00 ft
4.5–5					NA		
5–7.5	5–9		5.0	CLAY, and SILT: (5Y 5/2), olive gray, moist, med plasticity, soft,	CL		Headspace @ 6.0 ft
7.5–9		8–8.5	43.6	SAND, fine to medium, and SILT: (2.5Y 5/3), lt. olive brown, soft, loose, saturated	SM		ID: UANG-S6-SB1 (7.0-9.0) Headspace @ 8.0 ft
9				Total depth=9.0 ft.			

FILE: S6-SB1.LOG

Log of Soil Boring: SB2

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 33
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894973.42	DRILLER: Steve Mott
EAST COORDINATE: 1872996.69	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.46 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/09/92 @ 0920 END: 12/09/92 @ 1010	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				GRAVEL: fill material	GP		
0.5–1.5	X			SAND, and SILT, some CLAY: (2.5Y 4/3), olive brown, soft, crumbly, moist	SM		
1.5–2			6.5		NA		Headspace @ 1.5 ft
2–3	X			SAND, fine, and SILT, some CLAY: (2.5Y 4/2), dk. grayish brown, semi-cohesive, soft, moist	SM		
3–4	X	X	6.0	CLAY, and SILT, some SAND: (5Y 6/3), pale olive, moist, soft, semi-plastic	CL		ID: UANG-S6-SB2 (2-4) Headspace @ 3.50 ft
4–5	X		4.5	SAND, and SILT, some CLAY: (5Y 3/2), dk. olive gray, soft, moist, somewhat loose, non-cohesive	SM		Headspace @ 4.5 ft
5–6	X			SILT: (5Y 2.5/1), black, organic, shells, soft, moist, non-plastic	OL		
6–8.5	X	X	8.0	SAND, and CLAY, some SILT: (2.5Y 4/2), dk. grayish brown, soft to firm, slightly cohesive, saturated @ 7.0 feet, mostly sand @ bottom of interval	SC		ID: UANG-S6-SB2 (6.0-8.5) Headspace @ 7.0 ft
8.5				Total depth=8.5 ft.			

Depth scale: 1–21 ft

Log of Soil Boring: SB3

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 33
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894795.26	DRILLER: Steve Mott
EAST COORDINATE: 1872996.94	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.62 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/09/92 @ 1040 END: 12/09/92 @ 1145	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
0.5–1.5				SAND, and SILT, some CLAY: (5Y 3/2), dk. olive gray, moist, soft	SM		
1.5–4.0		X	11.0	SAND, and SILT, some CLAY: (2.5Y 4/2), dk. grayish brown, soft, moist to saturated			ID: UANG-S6-SB3 (0.5-2.5) Headspace @ 2.0 ft
			9.7				Headspace @ 3.50 ft
4.0–4.8				SILT, trace SAND and CLAY: (5Y 2.5/1), black, organic, moist, soft, shells	OL		
4.8–5.6				SAND, and SILT, some CLAY: (2.5Y 4/2), olive gray, soft, moist, non-cohesive	SM		
5.6–6.5			5.1	SILT, and CLAY, some SAND: (5Y 5/2), olive gray, firm, moist, non-plastic	ML		Headspace @ 5.5 ft
6.5–8.0				SILT, and CLAY, some SAND: (5Y 6/3), pale olive, moist, soft, semi-plastic			
8.0–9.0		X	7.2	SAND, and SILT, some CLAY: mottled (5Y 5/2), olive gray, and (2.5Y 5/4), lt. olive brown, soft, moist to saturated	SM		ID: UANG-S6-SB3 (6.5-9.0) Headspace @ 8.0 ft
9.0				Total depth=9.0 ft.			

Log of Soil Boring: SB4

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 34
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft–BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894626.04	DRILLER: Steve Mott
EAST COORDINATE: 1872994.96	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.32 ft–MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/09/92 @ 1355 END: 12/09/92 @ 1455	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0					NA		
0–1	X			SAND, and SILT, some CLAY: (5Y 3/1), v. dk. gray, moist, soft, crumbly, non-plastic	SM		ID: UANG-S6-SB4 (0-2)
1–4	X	X (1.5–2)	153 (1.5 ft); 104 (3.5 ft)	CLAY, and SILT, trace SAND: (5Y 5/3), olive, soft, med plasticity, moist to saturated, mottled w/ (5Y 5/6), olive, @ 3.0 feet	CL		Headspace @ 1.5 ft; Headspace @ 3.50 ft
4–6	X		67	SILT, some CLAY: (5Y 5/2), olive gray, moist, soft, semi-plastic	ML		Headspace @ 5.0 ft
6–8.5	X	X (7–8)	50	CLAY, some SILT: (5Y 5/3), olive, soft, saturated, plastic, some areas more silty, discrete blobs of (2.5Y 3/3), dk. olive brn,	CL		ID: UANG-S6-SB4 (6.0-8.5) Headspace @ 7.0 ft; Collected duplicate sample- UANG-S6-SB4 (8.5-11.0)
8.5				Total depth=8.5 ft.			

Depth scale: 1–21 feet.

FILE: S6-SB4.LOG

Log of Soil Boring: SB5

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 36
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894438.40	DRILLER: Steve Mott
EAST COORDINATE: 1872993.72	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.10 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/10/92 @ 0920 END: 12/10/92 @ 1005	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1.5				SAND, and SILT, some CLAY: (5Y 2.5/2), dk. olive, topsoil	SM		
1.5–4		X	6.0	SAND, and SILT, some CLAY: (5Y 5/3), olive, soft to firm with depth, non-plastic, non-cohesive, moist, some rust discoloration,			ID: UANG-S6-SB5 (0-2) Headspace @ 1.5 ft
			10.0				Headspace @ 3.00 ft
4–6			12	SILT, and CLAY, some SAND: (5Y 5/3), olive, saturated, soft, non-plastic, (2.5Y 5/4), lt. olive brown blobs	ML		Headspace @ 5.5 ft
6–8		X	16.5	CLAY, and SAND: (5Y 5/3), olive, mottled w/ (2.5Y 5/4), lt. olive brown zones, soft, non-cohesive, saturated	CL		ID: UANG-S6-SB5 (6.0-8.5) Headspace @ 7.5 ft
8–8.5				CLAY, and SAND: (5BG 5/1), greenish gray, saturated, soft			
				Total depth=8.5 ft.			

Log of Soil Boring: SB6

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 36
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894211.10	DRILLER: Steve Mott
EAST COORDINATE: 1872993.34	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.04 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/10/92 @ 1040 END: 12/10/92 @ 1130	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1				SAND, and SILT: (10YR 3/1), v. dk. gray, topsoil	SM		
1–2			5.0	SILT, and CLAY, some SAND: (5Y 7/3), pale yellow, soft, damp, slightly plastic, some mica grains	ML		Headspace @ 1.0 ft
2–3				CLAY, and SILT: (5Y 5/3), olive, moist to saturated, soft, (2.5Y 5/4), lt. olive brown discoloration	CL		
3–3.5		X	5.4	SAND, med to coarse, (5Y 5/3), olive, soft, very loose, quartz and mica, 30% dark mineral grains, clean and well sorted	SP		ID: UANG-S6-SB6 (2-4) Headspace @ 3.00 ft
3.5–4				CLAY, and SILT: (5Y 5/2), olive gray, and thin interbedded rust color sand zones	CL		
4–6			7.5	SILT, and SAND, fine, some CLAY: (5Y 5/2), olive gray, w/ blobs of (2.5Y 3/2), v. dk. grayish brown, soft, fissile, non-plastic,	ML		Headspace @ 5.5 ft
6–8.5		X	6.9	CLAY, and SILT, some SAND: (5Y 5/2), olive gray, some (2.5Y 3/2), v. dk. grayish brown discoloration, soft, semi-plastic	CL		ID: UANG-S6-SB6 (6.0-8.5) Headspace @ 7.0 ft Collected duplicate sample-UANG-S6-SB6 (8.5-11.0)
8.5				Total depth=8.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S6-SB6.LOG

Log of Soil Boring: SB7

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 37
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893990.37	DRILLER: Steve Mott
EAST COORDINATE: 1872990.81	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.56 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/10/92 @ 1345 END: 12/10/92 @ 1435	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5	X			SAND, and SILT, some CLAY: (10YR 3/1), dk. brown, topsoil	SM		
0.5–2	X		3.5	CLAY, and SILT, some SAND: (5Y 6/3), pale olive, soft, damp, non-plastic, roots	CL		Headspace @ 1.0 ft
2–3	X			SILT, and SAND, fine: (5Y 7/2), lt. gray, dry, firm,	ML		
3–4	X	X	5.0	SAND, fine, some SILT, trace CLAY: (5Y 5/2), olive gray, dry, loose,	SM		ID: UANG-S6-SB7 (2-4) Headspace @ 3.00 ft
4–5	X			SAND, and SILT, some CLAY: (5Y 5/3), olive, and (2.5Y 4/3), olive brown, soft, moist	SM		
5–6	X		2.6	CLAY, some SILT: (5Y 5/3), olive, soft, saturated, med plastic	CL		Headspace @ 5.5 ft
6–8	X	X	1.4	CLAY: (5Y 5/3), olive, and (10YR 2/2), v. dk. brown specks, specks are more lightly colored away from centers, saturated, soft, cohesive	CL		ID: UANG-S6-SB7 (6.0-8.5) Headspace @ 7.0 ft
8–8.5	X			SILT, and SAND, some CLAY: (5Y 5/3), olive	ML		
				Total depth=8.5 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB8	ENGINEERING-SCIENCE, INC.
PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 38
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893778.69	DRILLER: Steve Mott
EAST COORDINATE: 1872992.32	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.61 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/10/92 @ 1510 END: 12/10/92 @ 1540	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
0.5–1.5					NA		
1.5	X		1.7	SILT, and SAND: (5Y 7/2), lt. gray, hard, dry, firm	ML		Headspace @ 1.5 ft
3.0	X	X	0.0	SILT, and SAND: (5Y 5/2), olive gray, soft, moist @ 3.5 ft,			ID: UANG-S6-SB8 (2.5-4.5) Headspace @ 4.00 ft
4.5	X		0.3	CLAY, and SILT, some SAND: (5Y 5/2), olive gray, soft, saturated @ 5.5 ft	CL		Headspace @ 5.5 ft
6.25	X			SAND, coarse: (2.5Y 4/4), olive brown, loose, clean and well sorted, soft, saturated, v. dk. brown @ contact with underlying clay	SP		
6.75	X	X	0.3	CLAY, some SILT: (5Y 5/2), olive gray, some areas of interdispersed v. dk. brown and olive brown,	CL		ID: UANG-S6-SB8 (6.5-9.0) Headspace @ 7.5 ft
9.0				Total depth=9.0 ft.			

FILE: S6-SB8.LOG

Log of Soil Boring: SB9

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 41
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893241.92	DRILLER: Steve Mott
EAST COORDINATE: 1872977.09	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.81 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/11/92 @ 1345 END: 12/11/92 @ 1440	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				SAND, and SILT, some CLAY: (10YR 3/1), dk. brown, topsoil, roots	SM		
0.5–2.5		☒	0.7	SAND, and SILT, some CLAY: (2.5Y 5/3), lt. olive brown, soft, moist, non-plastic,			ID: UANG-S6-SB9 (0-2) Headspace @ 1.0 ft
2.5–4			1.8	CLAY, some SAND: (5Y 5/3), olive, soft, saturated, non-plastic	CL		Headspace @ 3.00 ft
4–5				CLAY: (5Y 5/2), olive gray, mottled w/ (10YR 4/4), dk. yellow brn, soft, saturated, non-plastic	CL		
5–5.5			1.5	SAND, coarse, some SILT and CLAY: (5Y 5/3), olive, soft, loose, saturated	SW		Headspace @ 5.0 ft
5.5–6					NA		
6–8.5		☒	1.2	CLAY: (5Y 5/3), olive, soft, saturated, mottled w/ (10YR 4/4), dk. yellowish brown, and dk. brown inclusions that are hard, brown inclusions do not appear to be organic contamination	CL		ID: UANG-S6-SB9 (6.0-8.5) Headspace @ 6.5 ft Collected duplicate sample- UANG-S6-SB9 (8.5-11.0)
8.5				Total depth=8.5 ft.			

FILE: S6-SB9.LOG

Log of Soil Boring: SB10

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 6, Ramp Washdown
PROJECT NUMBER: Ut014	REF. LOGBOOK: 2, pg. 42
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 893013.25	DRILLER: Steve Mott
EAST COORDINATE: 1872975.89	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4216.43 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/11/92 @ 1455 END: 12/11/92 @ 1535	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				SAND, and SILT: (5Y 3/2), dk. olive gray, topsoil,	ML		
0.5–2	0–1.5	X	1.2	CLAY, and SILT, some SAND: (2.5Y 4/3), olive brown, soft, moist, non-plastic,	CL		ID: UANG-S6-SB10 (0-2) Headspace @ 1.0 ft
2–4	2–4		1.1	CLAY, some SAND: (5Y 5/3), olive, with (2.5Y 4/4), olive brown discoloration and dk. brown specks, moist, non-plastic	CL		Headspace @ 3.00 ft
4–6	4–6		1.5	CLAY, and SILT, some SAND: (5Y 5/2), olive gray, mottled w/ (10YR 4/4), dk. yellowish brown sand and clay, saturated, non-plastic, soft	CL		Headspace @ 5.0 ft
6–8.5	6–8.5	X	1.3	CLAY, and SILT: same as above	CL		ID: UANG-S6-SB10 (6.0-8.5) Headspace @ 7.0 ft
8.5				Total depth=8.5 ft.			

FILE: S6-SB10.LOG

Site 7 - Oil Sludge Pond

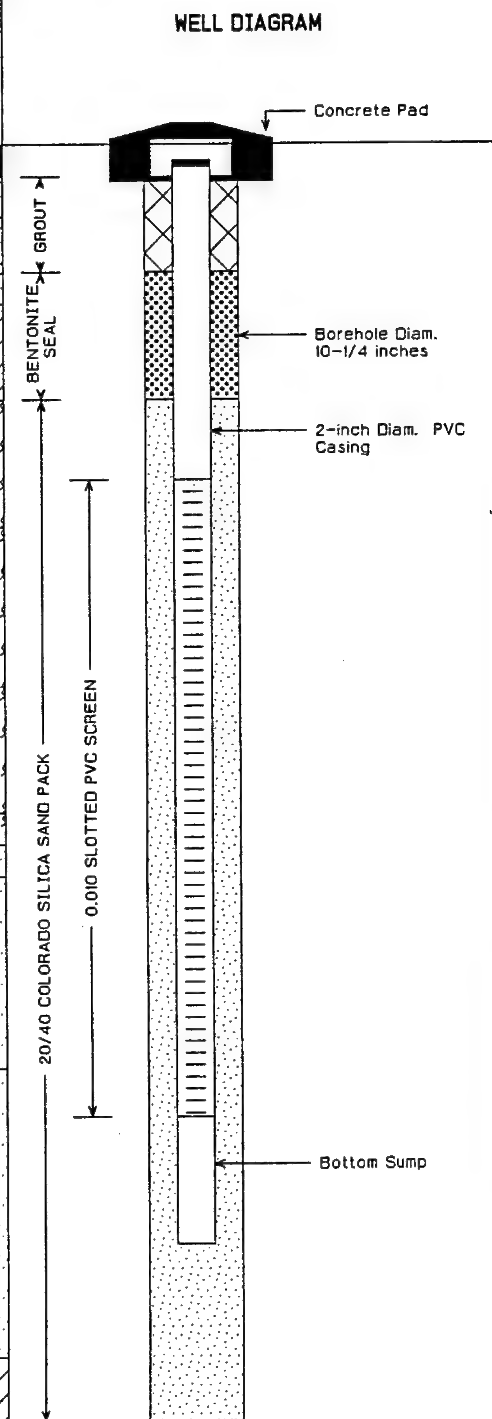
Log of Monitoring Well: S7MW1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 72
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 895090.25
GROUND ELEVATION: 4215.15 ft-MSL	EAST COORDINATE: 1874329.28
WELL DEPTH: 17.26 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.95 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4210.19 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4214.84 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 20.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/04/93	END COMPLETION: 01/05/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
0				ASPHALT	NA	
0.5–2.5				SAND, and SILT, and GRAVEL: fill material, grayish brown, soft	GM	
2.5–4				SAND, and CLAY: (5Y 5/3), olive, very moist @ 3.5 feet	SC	
4–6				SILT: (5Y 2.5/1), black, organic, shells, some mottled olive	OL	
6–8.5				CLAY, some SAND and SILT: (5Y 4/1), dk. gray, soft, saturated, shells, organic	OL	
8.5–10.5				CLAY, and SILT, some SAND: (5Y 4/1), dk. gray, soft, some mica, shells, mottled olive and greenish gray zone @ 10.0 feet, organic	OL	
10.5–11				CLAY, and SAND: (5Y4/1), dk. gray, organic, mica	OL	
11–11.5				SAND, fine, some SILT: (5Y 4/1), dk. gray	SM	
11.5–14.5				SAND, medium: (5Y 5/1), gray, soft, loose, quartz and mica, moderately well sorted	SW	
14.5–19				CUTTINGS: SAND, same as above	SW	
19–20				CLAY @ 19 ft	CL	
20				Total depth = 20.0 ft.		

WELL DIAGRAM



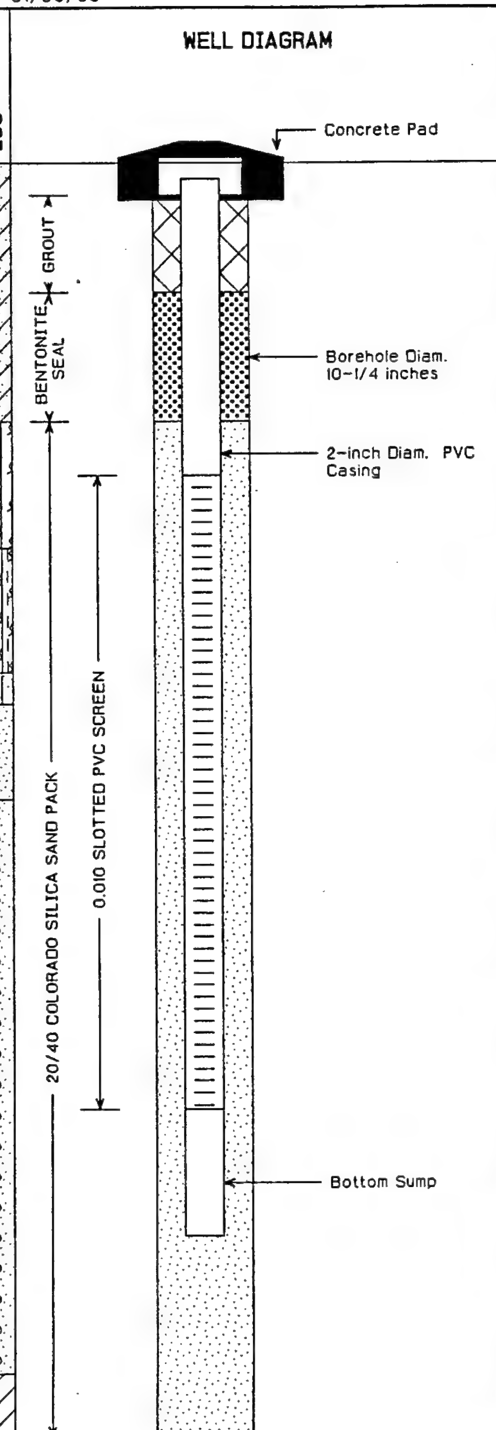
FILE: S7-MW1.LOG

Log of Monitoring Well: S7MW2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 72
CLIENT/PROJECT: HAZWRAP/NGB	NORTH COORDINATE: 894891.58
GROUND ELEVATION: 4215.31 ft-MSL	EAST COORDINATE: 1874247.23
WELL DEPTH: 16.84 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5.51 ft-BTOC	DRILLING CONTRACTOR: PC Exploration
GROUNDWATER ELEVATION: 4210.54 ft-MSL	DRILLER: Dave Mott
DATE MEASURED: 1/27/93	DRILLING RIG: Mobile B-57
TOC ELEVATION: 4215.10 ft-MSL	DRILLING METHOD: 6 1/4 in. ID. Hollow Stem Auger
BOREHOLE DEPTH: 20.00 ft-BGL	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon
BEGIN COMPLETION: 01/04/93	END COMPLETION: 01/05/93

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0–1.5			57	SAND and SILT, some CLAY, trace GRAVEL: (5Y 5/3), olive, soft, mottled with (10YR 5/8), yellowish brown streaks, non-plastic	SC
3–4			45	SAND, and SILT, some CLAY, trace GRAVEL: (5Y 5/3), olive, soft, non-plastic, moist	
4–6			43.9	SILT, (5Y 2.5/1), black, organic, shells, soft, non-plastic, saturated @ 5.0 feet	OL
6–7				SILT, and CLAY: (5Y 5/2), olive gray, soft, shells, crumbly, saturated, non-plastic	ML
7–8			28.7	SILT, and CLAY: (5Y 3/1), v. dk. gray, soft, shells, non-plastic	
8–8.5				SAND, and SILT: (5Y 5/2), olive gray	SM
8.5–10			33	SAND, coarse: (5Y 5/2), olive gray, well sorted quartz and mica	SP
10–19				CUTTINGS: SAND, fine to coarse	SW
19–20				CLAY @ 19 ft	CL
20				Total depth = 20.0 ft.	



Log of Soil Boring: SB1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 20
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 11.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895030.32	DRILLER: Steve Mott
EAST COORDINATE: 1874285.37	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.19 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/03/92 @ 1510 END: 12/03/92 @ 1700	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				ASPHALT:	NA		
1				GRAVEL: fill material	GC		
2			952	SAND, and SILT: (5Y 3/1), v. dk. gray, soft, friable, odor	SM		Headspace @ 2.00 ft
3		X	1507	SAND, and CLAY, some SILT: (5G 5/1), greenish gray, soft, moist, odor	SC		ID: UANG-S7-SB1 (2.5-4.5) Headspace @ 3.0 ft
4				SILT, some CLAY: (2.5Y 2/0), black, organic, gastropod shells, crumbly, semi-firm, non-plastic	OL		
5–6			820	SILT: (5Y 3/1), v. dk. gray, crumbly, soft, shells, odor, non-plastic			Headspace @ 5.5 ft
7				SILT, and CLAY: (5G 5/1), greenish gray, moist, semi-plastic, mica	ML		
				SILT: (5Y 3/1), v. dk. gray, plastic, shell fragments, moist	OL		
8		X	476	SAND, fine, and SILT: (5Y 5/1), gray, moist to saturated, soft, mica, thin gravel zone @ 8.0 feet	SM		ID: UANG-S7-SB1 (7-9) Headspace @ 7.5 ft
9				SILT, and CLAY: (5Y 3/1), v. dk. gray, plastic, moist, shells	OL		Headspace @ 9.5 ft
10			93.2	SAND, fine, some SILT: (5Y 4/1), dk. gray, moist, soft	SM		
11				Total depth=11.0 ft.			

FILE: S7-SB1.LOG

Log of Soil Boring: SB2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER:	REF. LOGBOOK: 2, pg. 22
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. JENSEN	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894987.75	DRILLER: STEVE MOTT
EAST COORDINATE: 1874288.11	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.45 ft-MSL	DRILLING METHOD:
DRILLING BEGIN: 12/04/92 @ 0915 END: 12/04/92 @ 1010	SAMPLING METHOD:

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
1					NA		
2				GRAVEL: fill material	GC		
				SAND, and SILT: (5G 5/1), greenish gray, loose	SC		
3–4		X	54	SILT, and SAND, coarse: (5Y 4/1), dk. gray, interbedded 3 inch layers of coarse sand and silt, soft, very moist, slight odor	ML		
4.5				CLAY, and SILT: (5Y 2.5/1), black, shells, non-plastic, moist, soft	OL		
5				SAND, and SILT: (5Y 3/1), v. dk. gray, soft, moist	SM		
6			56	CLAY, and SILT: (5Y 2.5/1), black, shells, semi-plastic, moist	OL		
7				CLAY, and SAND, some SILT: (5Y 4/1), dk. gray, soft, moist	SC		
7.5		X	44	SILT, and SAND, fine: (5Y 5/1), gray, observed hydrocarbon staining, odor, grains cemented, hard	SM		
8				CLAY, and SILT: (5Y 4/1), dk. gray, soft, non-plastic, saturated	CL		
9				Total depth=9.0 ft.			

Log of Soil Boring: SB3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 23
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894942.93	DRILLER: Steve Mott
EAST COORDINATE: 1874306.73	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.68 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/04/92 @ 1039 END: 12/04/92 @ 1140	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0				ASPHALT:	NA		
0.5					NA		
1	X			GRAVEL, and CLAY: fill material	GC		
2	X			SILT, and CLAY: (5Y 3/1), v. dk. gray	ML		
2.5	X			SAND, coarse: (5Y 3/1), v. dk. gray,	SW		
3	X	X	0.0	SILT: (5Y 5/1), gray, moist, soft	ML		ID: UANG-S7-SB3 (2.5-4.5) Headspace @ 3.50 ft
4	X			SILT, and CLAY: (5Y 4/1), dk. gray, organic, wood chips soft, moist, non-plastic	OL		
4.5	X		0.0	CLAY, and SILT: (5Y 2.5/1), black, organic, shells, semi-plastic, moist	OL		Headspace @ 5.5 ft
6.5					NA		
7.5	X	X	NA	CLAY, and SILT: (5Y 3/1), v. dk. gray, soft, saturated, semi-plastic	OL		ID: UANG-S7-SB3 (6.5-9.0) Headspace @ 8.5 ft
9				Total depth=9.0 ft.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 44
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895086.42	DRILLER: Steve Mott
EAST COORDINATE: 1874286.59	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.87 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/14/92 @ 1100 END: 12/14/92 @ 1150	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–1.2					NA		
1.2–2.3	X			GRAVEL, and SAND, and SILT: fill material	GM		
2.3–3.0	X			SAND, and CLAY, some SILT: (2.5Y 5/3), lt olive brown, thin layer of coarse angular sand	SC		
3.0–3.7	X		0.5	CLAY, and SAND, some SILT: (5Y 5/3), olive, soft, moist, non-plastic	SC		Headspace @ 3.50 ft
3.7–4.7	X			SILT: (5Y 2.5/1), black, organic, shells, moist, soft, non-plastic	OL		
4.7–6.5	X	X	2.0	SILT, and CLAY: (10YR 4/1), dk. gray, organic, shells, soft, non-plastic, small orange seeds, saturated @ about 5.5 feet	OL		ID: UANG-S7-SB4 (4.5-6.5) Headspace @ 5.5 ft
6.5–9.0	X		3.0	SILT, and CLAY: (5Y 4/1), dk. gray, organic, soft, saturated large gastropod shells up to 1 inch long	OL		Headspace @ 7.5 ft
9.0				Total depth=9.0 ft.			

FILE: S7-SB4.LOG

Log of Soil Boring: SB5

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 45
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 9.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895006.49	DRILLER: Steve Mott
EAST COORDINATE: 1874331.54	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.39 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/14/92 @ 1400 END: 12/14/92 @ 1450	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	COMMENTS
0–0.5			ASPHALT:	NA	
0.5–1.5				NA	
1.5–2.25			SAND, some GRAVEL: fill material	GM	
2.25–4.0		0.0 / 2.5	SAND, and CLAY: (5Y 3/1), dk. gray, soft, moist, non-plastic	SC	Headspace @ 2.25 ft; Headspace @ 3.5 ft
4.0–5.0			SILT, and CLAY: (5Y 3/1), v. dk. gray, soft, moist, non-plastic organic, shells, roots	OL	
5.0–5.5	X	17.7	SILT: (5Y 2.5/1), black, organic, shells, moist, soft, non-plastic	OL	ID: UANG-S7-SB5 (4.5-6.5) Headspace @ 5.5 ft
5.5–6.5			SILT, some CLAY: (5Y 3/1), v. dk. gray, soft, moist to saturated, med plasticity	OL	
6.5–8.0				NA	
8.0–9.0	X	3.0	SILT, and CLAY: (5Y 3/1), v. dk. gray, soft, saturated	OL	ID: UANG-S7-SB5 (6.5-9.0) Headspace @ 8.5 ft
9.0			Total depth=9.0 ft.		

Depth scale: 1 – 21 ft. Interval recovery: 1.75–6.5 ft, 8.0–9.0 ft.

FILE: S7-SB5.LOG

Log of Soil Boring: SB6

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 45
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894902.57	DRILLER: Steve Mott
EAST COORDINATE: 1874237.16	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4215.00 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/14/92 @ 1500 END: 12/14/92 @ 1550	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

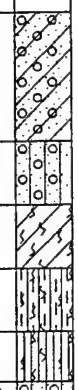
DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				GRAVEL, and SAND, some SILT: fill material	GM		
0.5–1.5			0.3	SAND, and SILT: (2.5Y 4/2), dk. gray brown, soft, moist	SM		Headspace @ 1.00 ft
1.5–2.2				SILT, and CLAY: (5Y 6/3), pale olive, soft, moist, slightly plastic	ML		
2.2–3.5				SAND, and SILT, some CLAY: mottled (2.5Y 4/2), dk. gray brown, and (2.5Y 6/2), lt. brownish gray, soft, moist, slightly plastic	SM		
3.5–4.2			0.4	SILT, some CLAY: (10YR 3/1), v. dk. gray, soft, moist, non-plastic	ML		Headspace @ 3.5 ft
4.2–4.7				SILT: (5Y 2.5/1), black, organic, shells, moist, soft, non-plastic	OL		
4.7–6.0			0.3	SILT, some CLAY: (10YR 4/1), dk. gray, soft, saturated, non-plastic	OL		ID: UANG-S7-SB6 (4-6) Headspace @ 5.5 ft
6.0–7.5					NA		
7.5–8.5			0.5	SILT, and CLAY: (5Y 3/1), v. dk. gray, soft, saturated	OL		Headspace @ 8.0 ft
				Total depth=8.5 ft.			

Log of Soil Boring: SB7

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 95
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 7.0 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 894950.14	DRILLER: Dan Bowden
EAST COORDINATE: 1874220.32	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4214.64 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 2/08/93 @ 1320 END: 2/08/93 @ 1350	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1					NA		
1–3	X	X	1.8	SAND, some SILT, some CLAY, little GRAVEL: (2.5Y 5/3), lt. olive brown, some darker and lighter areas, soft, moist	SC		ID: UANG-S7-SB7 (1-3) Headspace @ 1.50 ft
3–4	X			SAND, and SILT: (2.5Y 5/3), lt. olive brown, soft, crumbly	SM		Headspace @ 3.5 ft
4–5	X		1.1	CLAY: (5Y 5/2), olive gray, firm, moist, non-plastic, shells	CL		
5–6	X			SILT, some CLAY: (2.5Y 5/3), lt. olive brown, shells, moist, soft,	ML		
6–6.8	X	X	1.1	SILT, some CLAY: (5Y 2.5/1), black, organic, shells, soft, moist	OL		ID: UANG-S7-SB7 (5-7) Headspace @ 6.5 ft
6.8–7				SAND, and SILT: (5Y 6/2), lt. olive gray, saturated	SM		
				Total depth=7.0 ft.			



Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S7-SB7.LOG

Log of Soil Boring: SB8

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 54
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 6.5 ft-BGL
LOGGED BY: T. M. Jensen	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895044.02	DRILLER: Steve Mott
EAST COORDINATE: 1874212.71	DRILLING RIG: Acker Soil Max
GROUND ELEVATION: 4214.40 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/17/92 @ 0920 END: 12/03/92 @ 1000	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				ASPHALT:	NA		
1	X			GRAVEL, and SAND: fill material	GC		
2	X		96.6	SILT, and SAND, some CLAY: (5Y 4/2), olive gray, soft, moist	SM		Headspace @ 2.00 ft
3	X			CLAY, and SAND, some GRAVEL: (5Y 5/3), olive, soft, moist, non-plastic	SC		
4	X		62.4	CLAY, and SAND: mottled (5Y 2.5/1), black, and (5Y 5/3) olive, soft moist	SC		Headspace @ 3.5 ft
5	X			SILT: (5Y 2.5/1), black, moist, soft, shells, non-plastic	OL		
6	X	X	44.1	CLAY, and SILT: (2.5Y 3/2), v. dk. grayish brown, soft, shells, saturated	CL		ID: UANG-S7-SB8 (4.5-6.5) Headspace @ 5.5 ft
7				Total depth=6.5 ft.			
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

Log of Soil Boring: SB9

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 69
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895075.46	DRILLER: Dave Mott
EAST COORDINATE: 1874332.57	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4215.18 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/30/92 @ 1115 END: 12/30/92 @ 1230	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				ASPHALT:	NA		
1				GRAVEL, and SAND: fill material	GC		
2			0.0	SILT, and SAND, some CLAY: (10YR 4/3), dk. brown, moist, semi-plastic	SM		Headspace @ 2.00 ft
3				SILT, and CLAY, little SAND, fine: (2.5Y 5/3) lt. olive brown, moist	SC		
4			0.0	SILT, and CLAY: (5Y 3/1), v. dk. gray, shells, moist	OL		Headspace @ 3.5 ft ID: UANG-S7-SB9 (2.5-4.5) Collected Duplicate UANG-S7-SB9 (8.5-9.5)
5				SILT, some CLAY: (5Y 5/1), gray, moist to saturated, slightly plastic	ML		
6			0.0				Headspace @ 5.5 ft ID: UANG-S7-SB9 (4.5-6.5) Collected MS and MSD
7			0.0	CLAY, and SILT: (5Y 5/1), gray, moist to saturated	CL		Headspace @ 7.5 ft
8							
9				Total depth=8.5 ft.			
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

FILE: S7-SB9.LOG

Log of Soil Boring: SB10

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 7, Oil Sludge Pond
PROJECT NUMBER: UT014	REF. LOGBOOK: 2, pg. 68
CLIENT/PROJECT: HAZWRAP/NGB	TOTAL DEPTH: 8.5 ft-BGL
LOGGED BY: J. F. Bernard	DRILLING CONTRACTOR: PC Exploration
NORTH COORDINATE: 895036.91	DRILLER: Dave Mott
EAST COORDINATE: 1874361.31	DRILLING RIG: Mobile B-57
GROUND ELEVATION: 4215.36 ft-MSL	DRILLING METHOD: 3 1/4 in. ID. Hollow Stem Auger
DRILLING BEGIN: 12/29/92 @ 1605 END: 12/29/92 @ 1645	SAMPLING METHOD: 2 1/2 in. ID. Split Spoon w/ ring samplers

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–0.5				ASPHALT:	NA		
0.5–3.5	X (1–3)		0.0	GRAVEL, and SAND: fill material	GC		Headspace @ 2.00 ft
3.5–4.0	X (3–5)		0.0	SAND, fine to coarse, and SILT: (2.5Y 5/4), olive brown, moist	SM		Headspace @ 3.5 ft
4.0–5.5				CLAY, and SILT: (5Y 6/4) pale olive, moist, plastic	CL		
5.5–6.3	X (5–7)	X	0.0	SILT, and CLAY: (5Y 3/1), v. dk. gray, shells, moist, non-plastic	OL		Headspace @ 5.5 ft ID: UANG-S7-SB10 (4.5-6.5)
6.3–7.5				CLAY, and SILT: (5Y 5/2), olive gray, moist, plastic	CL		
7.5–8.5	X (7–8.5)		0.0	CLAY, and SILT, little SAND, fine, trace GRAVEL: (5Y 5/2), olive gray, saturated	SC		Headspace @ 7.5 ft
8.5				Total depth=8.5 ft.			

Depth scale: 1–21 ft

FILE: S7-SB10.LOG

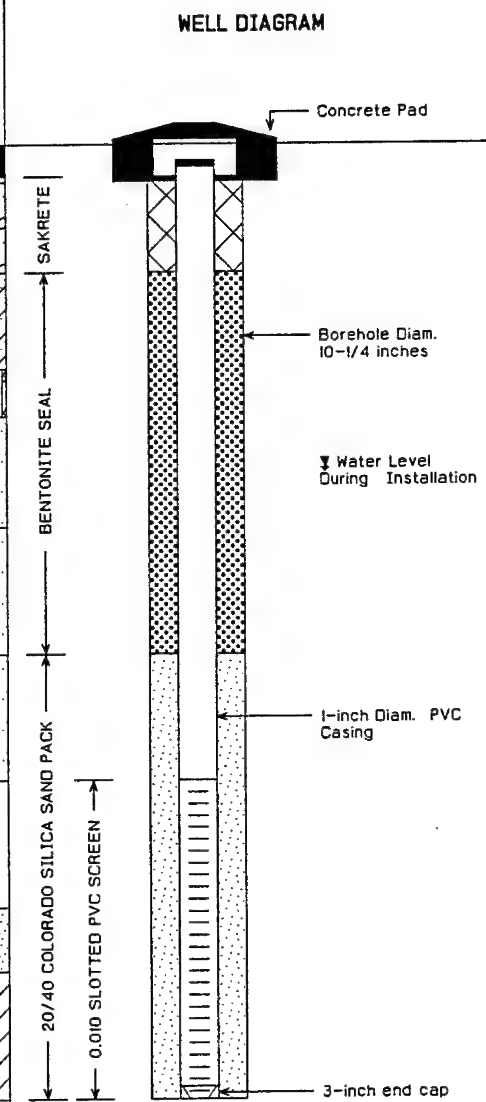
Site 10 - Petroleums, Oils, and Lubricants Facility

Log of Monitoring Well: PI-1

ENGINEERING–SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 2
CLIENT/PROJECT: HAZWRAP/ANGRC	NORTH COORDINATE: 895212.0097
GROUND ELEVATION: 4214.86 ft-MSL	EAST COORDINATE: 1873532.6430
WELL DEPTH: 15 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: ft-MSL	DRILLER: Charles Shorey Jr.
DATE MEASURED: 23 May 94	DRILLING RIG: CME 75
TOC ELEVATION: 4214.68 ft-MSL	DRILLING METHOD: 6.25" I.D. Hollow Stem Auger
BOREHOLE DEPTH: 15 ft-BGL	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon
BEGIN COMPLETION: 1600 23 May 94	END COMPLETION: 23 May 94

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG
				Asphalt	NA	
1				Road Base	NA	
2–3.5			1.6	SAND, fine to medium, and CLAY, some SILT: (5GY 4/1) dark greenish gray, damp, soft, loose.	SC	
4				SILT: (N 3/3) very dark gray, moist, soft, roots, organic.	OL	
5			0.0	CLAY, and SAND, fine: (5Y 6/1) gray, saturated, soft, sand concentration increasing with depth.	SC	
6–7			0.0	SAND, fine and SILT: (5Y 6/1), gray, soft, saturated, iron stains, sand concentration increasing with depth.	SM	
8–9			0.0	SAND, fine to medium: (5Y 4/1) dark gray, saturated, soft, mica flakes prevalent.	SW	
10–11				SILT and SAND, fine: (5Y 4/1) dark gray, saturated, mica.	ML	
12				SAND, coarse: (N 4/4) dark gray, soft, loose, greater mica concentration, mafic, granitic origin.	SP	
13				CLAY: (N 2.5), black, soft, plastic, very cohesive, organic.	CL	
14				CLAY, some SILT: (5BG 5/1) greenish gray, plastic.		
15				Total Depth 15 ft.		

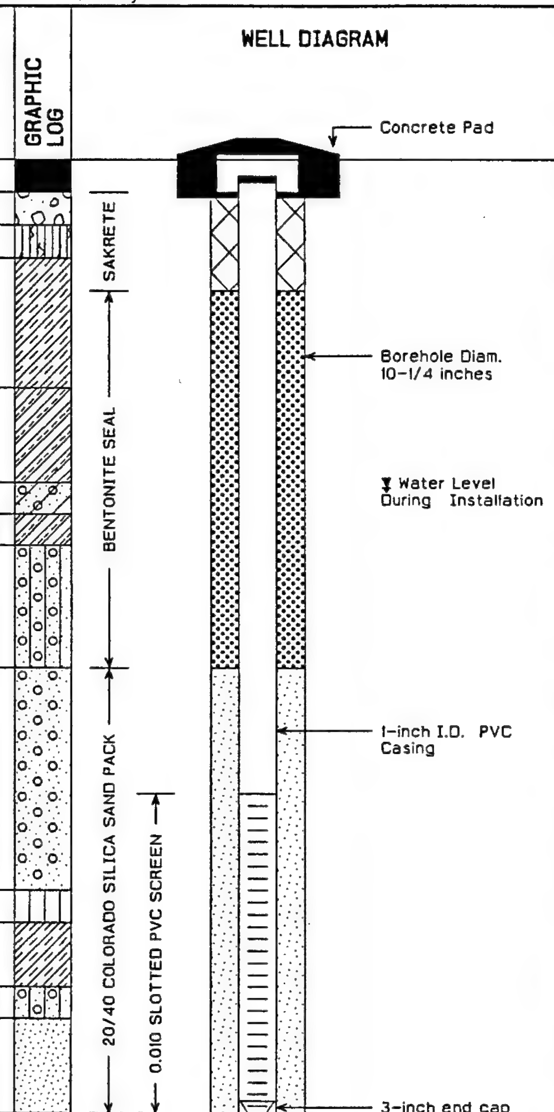


Log of Monitoring Well: PI-2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 3
CLIENT/PROJECT: HAZWRAP/ANGRC	NORTH COORDINATE: 895506.0492
GROUND ELEVATION: 4214.30 ft-MSL	EAST COORDINATE: 1873772.4404
WELL DEPTH: 15 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: ft-MSL	DRILLER: Charles Shorey Jr.
DATE MEASURED: 24 May 95	DRILLING RIG: CME 75
TOC ELEVATION: 4213.81 ft-MSL	DRILLING METHOD: 6.25" I.D. Hollow Stem Auger
BOREHOLE DEPTH: 15 ft-BGL	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon
BEGIN COMPLETION: 0900 24 May 94	END COMPLETION: 23 May 94

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
0				Asphalt	NA
0.5				Road Base	NA
1				SILT: (2.5Y 2.5/1) black, moist, soft, non-cohesive, non-plastic organic.	OL
1.8–3.2	X		0.0	CLAY, and SILT: (5Y 4/1) dark gray, grading to (5Y 5/1) gray, damp, soft, semi-plastic to plastic.	CL
3.5				Not logged	NA
5	X		0.0	SAND, fine, AND CLAY: (5Y 5/2) olive gray, saturated, soft.	SC
5.5				Not logged	NA
6–8	X		0.0	SAND, fine, and SILT: (5Y 5/2) olive gray, saturated, soft, semi-cohesive, some large pebbles, iron staining.	SM
8–11.5	X		0.0	SAND, fine to medium, some SILT: (5Y 5/2) olive gray, saturated, poorly sorted, loose, soft, mica prevalent, mafic minerals, quartz, granitic origin.	SW
11.5	X			SILT, some CLAY: (5Y 5/1) gray, saturated, soft, semi-cohesive.	ML
12	X			CLAY, some SILT: (5GY 4/1) dark greenish gray, soft, black specks.	CL
13	X			SAND, fine to medium, some SILT: (5GY 4/1) dark greenish gray.	SM
13.5				SAND, medium to coarse: (5Y 5/2) olive gray, loose, granitic origin.	SP
14.5				Not logged	
15				Total Depth 15 ft.	



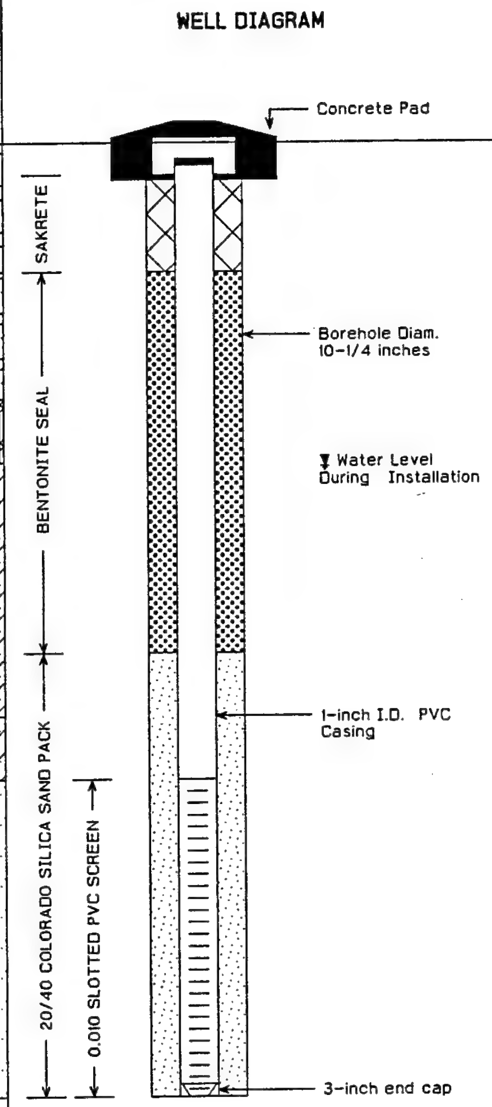
FILE: SIOPI-2.LOG

Log of Monitoring Well: PI-3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 2
CLIENT/PROJECT: HAZWRAP/ANGRC	NORTH COORDINATE: 895488.8283
GROUND ELEVATION: 4215.66 ft-MSL	EAST COORDINATE: 1873385.7539
WELL DEPTH: 15 ft-BGL	LOGGED BY: T.M. Jensen
WATER LEVEL: 5 ft-BTOC	DRILLING CONTRACTOR: Layne Environmental
GROUNDWATER ELEVATION: ft-MSL	DRILLER: Charles Shorey Jr.
DATE MEASURED: 24 May 94	DRILLING RIG: CME 75
TOC ELEVATION: 4215.41 ft-MSL	DRILLING METHOD: 6.25" I.D. Hollow Stem Auger
BOREHOLE DEPTH: 15 ft-BGL	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon
BEGIN COMPLETION: 1145 24 May 94	END COMPLETION: 24 May 94

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS
1			0.0	Top is cobble rock (artifical cover) sand, silty gravel and clay (fill material).	NA
3			0.0	SAND, medium, and CLAY, some GRAVEL: (2.5Y 4/2) dark grayish brown, mottled (5Y 5/2) olive gray and (5Y 6/2) gray, moist, soft, non-plastic.	SC
4				SILT: (5Y 2.5/1) black, soft, non-plastic, rootlets, organic, shells.	OL
5			0.0	CLAY and SILT, some fine SAND: (5Y 2.5/1) black, saturated, soft, shells.	CL
7			0.0	Same as above. Except: non-cohesive, moist to wet, sand concentration increasing with depth.	
8				CLAY, and SILT, little SAND: (5Y 5/1) gray, saturated, soft.	
9			0.0	SAND, some CLAY, some SILT: (5Y 5/3) olive gray, soft, semi-cohesive.	SC
11			0.0	SAND, fine, and SILT, some CLAY: (5Y 5/2) olive gray, soft, mica prevalent.	SM
13			0.0	SAND, fine, and SILT: (5Y 5/2) olive gray, granitic origin, soft, loose.	
14				Not logged.	
15				Total Depth 15 ft.	



FILE: S10PI-3.LOG

Log of Soil Boring: SB-1

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 5
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 10 ft-BGL
LOGGED BY: T.M. Jensen	DRILLING CONTRACTOR: Layne Environmental
NORTH COORDINATE: 895476.0525	DRILLER: Charles Shorey Jr.
EAST COORDINATE: 1873606.5829	DRILLING RIG: CME 75
GROUND ELEVATION: 4214.06 ft-MSL	DRILLING METHOD: 4.25" I.D. Hollow Stem Auger
DRILLING BEGIN: 08:50 26 May 94 END: 10:30 26 May 94	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1				Concrete	NA		
1–3.5	2–4	3	1079	Fill - Sand and Gravel, some fines: (10YR 7/8) yellow.	NA		SAMPLE ID: S10-SB1 (2-4) VOA at 3.0 ft. Odor and fuel present under concrete.
3.5				SILT: (5Y 2.5/1) black, moist, non-plastic, organic, shells	OL		
4	4–6			SILT, some SAND, fine (5Y 6/1) gray, saturated, roots.	ML		
4.5–6		4.5	1185	CLAY, and SILT: (5Y 5/1) gray, damp to moist, firm, semi-plastic.	CL		VOA at 4.5 ft.
6–7.5	6–8	6.5	19.1	SILT, some CLAY: (5Y 5/1), gray, saturated, soft.	ML		SAMPLE ID: S10-SB1 (6-8) VOA at 6.5 ft.
7.5–8				SAND, fine: (5Y 5/1) gray, saturated, loose.	SW		
8–10	8–10		25.1	SAND, fine: (5Y 5/1) gray, saturated, loose, mica prevalent.			SAMPLE ID: S10-SB1 (8-10) peculiar odor
10				Total Depth 10 ft. BGS			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S10SB-1.LOG

Log of Soil Boring: SB-2

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 7
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 6 ft-BGL
LOGGED BY: T.M. Jensen	DRILLING CONTRACTOR: Layne Environmental
NORTH COORDINATE: 895412.2077	DRILLER: Charles Shorey Jr.
EAST COORDINATE: 1873765.8800	DRILLING RIG: CME 75
GROUND ELEVATION: 4213.87 ft-MSL	DRILLING METHOD: 4.25" I.D. Hollow Stem Auger
DRILLING BEGIN: 09:15 26 May 94 END: 10:00 26 May 94	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1				Concrete	NA		
1–2.5				Fill - Sand and gravel, some fines: (10YR 7/8) yellow.	SM		
2.5–3.5				SAND, fine and SILT: (5Y 4/1) dark gray, damp, firm, non-plastic.			SAMPLE ID: S10-SB2 (2-4)
3.5–4		X	164	SAND, and CLAY, some SILT: (5Y 5/1) gray, damp to moist, soft to firm, slightly plastic.	SC		
4–6		X	3643	SILT: (5Y 4/1) dark gray, moist to saturated, semi-plastic, fine mica, vitreous sheen on soil.	MH		SAMPLE ID: S10-SB2 (4-6)
6				Total depth 6 ft. BGS.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Log of Soil Boring: SB-3

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 8
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 7 ft-BGL
LOGGED BY: T.M. Jensen	DRILLING CONTRACTOR: Layne Environmental
NORTH COORDINATE: 895266.1621	DRILLER: Charles Shorey Jr.
EAST COORDINATE: 1873731.9040	DRILLING RIG: CME 75
GROUND ELEVATION: 4214.63 ft-MSL	DRILLING METHOD: 4.25" I.D. Hollow Stem Auger
DRILLING BEGIN: 10:30 26 May 94 END: 11:15 26 May 94	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–1				Cobble rock.	NA		
1–2.5	X (1–3)	X (2–3)	0.0	SAND and CLAY, some SILT: (5Y 5/2) olive gray mottled (5Y 3/1) very dark gray, damp, soft, non-plastic, non-cohesive.	SC		SAMPLE ID: S10-SB3 (1-3) VOA at 2.25 ft.
2.5–3				SILT: (5Y 2.5/1) black, organic, shells.	OL		
3–3.5	X (3–5)			SILT: (5Y 6/2) light olive gray, damp, soft, non-plasitc, shells.	ML		
3.5–5		X (4–5)	0.0	SILT, and CLAY: (5Y 4/1) dark gray, saturated, soft, plastic, rootlets	MH		SAMPLE ID: S10-SB3 (3-5) voa AT 4.25 FT. Collected MS/MSD: S10-SB3 (3-5) MS S10-SB3 (3-5) MSD
5–7	X (5–7)			SILT and SAND, trace GRAVEL: (5Y4/2) olive gray, with (5Y 2.5/1) black, and (2.5Y 4/4) olive brown, mottling, saturated, soft, non-plastic.	SM		
7				Total depth 7 ft. BGS.			

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

FILE: S10SB-3.LOG

Log of Soil Boring: SB-4

ENGINEERING-SCIENCE, INC.

PROJECT LOCATION: Utah Air National Guard	SITE LOCATION: Site 10 - POL
PROJECT NUMBER: UT014	REF. LOGBOOK: 7 pg 9
CLIENT/PROJECT: HAZWRAP/ANGRC	TOTAL DEPTH: 6 ft-BGL
LOGGED BY: T.M. Jensen	DRILLING CONTRACTOR: Layne Environmental
NORTH COORDINATE: 895223.8360	DRILLER: Charles Shorey Jr.
EAST COORDINATE: 1873630.1825	DRILLING RIG: CME 75
GROUND ELEVATION: 4215.31 ft-MSL	DRILLING METHOD: 4.25" I.D. Hollow Stem Auger
DRILLING BEGIN: 13:30 26 May 94 END: 14:10 26 May 94	SAMPLING METHOD: 2.5" I.D. X 2.5' Split Spoon

DEPTH (feet)	INTERVAL RECOVERY	ANALYTICAL SAMPLE	PID HDSP (ppm)	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
0–2				Gravel fill, consisting of sand and gravel and some fines (10YR 7/8) yellow.	NA		
2–4	X (2.5–4)	X	4	SAND, and SILT, some CLAY, little GRAVEL: (5Y 4/1) dark gray, damp to moist, soft, non-cohesive.	SC		SAMPLE ID: S10-SB4 (2-4) VOA at 3.25 ft.
4–5	X (4–6)			SILT: (5Y 6/2) light olive gray, saturated, soft, shells.	ML		SAMPLE ID: S10-SB4 (4-6) VOA at 5.25 ft.
5–6		X	0.8	CLAY and SILT: (5Y 4/1) dark gray, saturated, soft, semi-plastic.	CL		
6				Total depth 6 ft. BGS.			

FILE: S10SB-4.LOG

TABLE G.1
MONITORING WELL CONSTRUCTION DETAILS
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Station	Land Surface Elevation (feet above MSL)	Top of Casing Elevation (feet above MSL)	Borehole Depth (feet BLS)	Well Depth (feet BLS)	Screened Interval (feet BLS)
BGMW1	4219.11	4218.74	18.0	16.85	4.85-14.85
BGMW2 (1)	4215.54	4218.09	14.5	14.5	4.00-14.00
S1MW1	4218.32	4218.02	18.0	17.35	5.35-15.35
S1MW2	4217.93	4217.63	14.5	14.5	4.00-14.00
S2MW1	4217.43	4217.16	18.0	17.27	5.27-15.27
S2MW2	4217.75	4217.45	14.5	14.5	4.00-14.00
S3MW1 (1)	4213.16	4215.43	19.0	17.13	5.13-15.13
S3MW2 (1)	4216.25	4218.71	21.0	20.74	8.74-18.74
S4MW1	4214.41	4214.06	20.0	17.35	5.35-15.35
S5MW1 (1)	4214.05	4216.47	20.0	17.08	5.08-15.08
S6MW1	4216.92	4216.71	18.0	17.24	5.24-15.24
S6MW2	4216.58	4216.32	18.0	17.26	5.26-15.26
S6MW3 (1)	4216.89	4219.29	18.0	16.75	4.75-14.75
S6MW4	4214.86	4214.69	14.5	14.5	4.00-14.00
S6MW5	4214.78	4214.53	14.0	14.0	3.50-13.50
S7MW1	4215.15	4214.84	20.0	17.26	5.26-15.26
S7MW2	4215.31	4215.10	20.0	16.84	4.84-14.84

MSL = Mean Sea Level
BLS = Below Land Surface
(1) Above Ground Well Casing

APPENDIX H
TARGET COMPOUNDS AND DETECTION LIMITS

APPENDIX H

TABLE OF CONTENTS

TABLE H.1 (ES Berkeley Laboratory)
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Parameter (method)		
Volatile Organic Compounds (SW8240)		
Chloromethane	10.0	10.0
Bromomethane	10.0	10.0
Vinyl Chloride	10.0	10.0
Chloroethane	10.0	10.0
Methylene Chloride	5.0	5.0
Acetone	10.0	10.0
Carbon Disulfide	10.0	10.0
Trichlorofluoromethane	10.0	10.0
1,1-Dichloroethene	5.0	5.0
1,1-Dichloroethane	5.0	5.0
1,2-Dichloroethene (Total)	5.0	5.0
Chloroform	5.0	5.0
1,2-Dichloroethane	5.0	5.0
2-Butanone	10.0	10.0
1,1,1-Trichloroethane	5.0	5.0
Carbon Tetrachloride	5.0	5.0
Vinyl Acetate	10.0	10.0
Bromodichloromethane	5.0	5.0
1,2-Dichloropropane	5.0	5.0
cis-1,3-Dichloropropene	5.0	5.0
Trichloroethene	5.0	5.0
Benzene	5.0	5.0
Dibromochloromethane	5.0	5.0
1,1,2-Trichloroethane	5.0	5.0
trans-1,3-Dichloropropene	5.0	5.0
2-Chloroethylvinylether	10.0	10.0
Bromoform	5.0	5.0
2-Hexanone	10.0	10.0
4-Methyl-2-pentanone	10.0	10.0
Tetrachloroethene	5.0	5.0
1,1,2,2-Tetrachloroethane	5.0	5.0
Toluene	5.0	5.0
Chlorobenzene	5.0	5.0
Ethylbenzene	5.0	5.0
Styrene	5.0	5.0

TABLE H.1 (ES Berkeley Laboratory)-Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Parameter (method)		
Volatile Organic Compounds (SW8240)		
Total Xylenes	5.0	5.0
1,3-Dichlorobenzene	5.0	5.0
1,4-Dichlorobenzene	5.0	5.0
1,2-Dichlorobenzene	5.0	5.0
Halogenated Compounds (SW8010)		
Benzyl Chloride	5.0	5.0
Bromobenzene	5.0	5.0
Bromodichloromethane	1.0	1.0
Bromoform	2.0	2.0
Bromomethane	5.0	5.0
Carbon Tetrachloride	1.0	1.0
Chlorobenzene	1.0	1.0
Chloroethane	5.0	5.0
Chloroform	1.0	1.0
1-Chlorohexane	5.0	5.0
2-Chloroethylvinylether	2.0	2.0
Chloromethane	5.0	5.0
Chlorotoluenes	5.0	5.0
Dibromochloromethane	1.0	1.0
Dibromomethane	5.0	5.0
1,2-Dichlorobenzene	1.0	1.0
1,3-Dichlorobenzene	1.0	1.0
1,4-Dichlorobenzene	1.0	1.0
Dichlorodifluoromethane	18.0	18.0
1,1-Dichloroethane	1.0	1.0
1,2-Dichloroethane	1.0	1.0
1,1-Dichloroethene	1.0	1.0
cis-1,2-Dichloroethene	1.0	1.0
trans-1,2-Dichloroethene	1.0	1.0
Dichloromethane	5.0	5.0
1,2-Dichloropropane	1.0	1.0

TABLE H.1 (ES Berkeley Laboratory)-Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Parameter (method)		
Halogenated Compounds (SW8010)		
1,3-Dichloropropene	2.0	2.0
1,1,2,2-Tetrachloroethane	1.0	1.0
1,1,1,2-Tetrachloroethane	1.0	1.0
Tetrachloroethene	1.0	1.0
1,1,1-Trichloroethane	1.0	1.0
1,1,2-Trichloroethane	1.0	1.0
Trichloroethene	1.0	1.0
Trichlorofluoromethane	1.0	1.0
Trichloropropane	1.0	1.0
Vinyl Chloride	2.0	2.0
Aromatic Compounds (SW8020)		
Benzene	1.0	1.0
Ethylbenzene	1.0	1.0
Toluene	1.0	1.0
Xylenes (Total)	1.0	1.0
Chlorobenzene	2.0	2.0
1,2-Dichlorobenzene	4.0	4.0
1,3-Dichlorobenzene	4.0	4.0
1,4-Dichlorobenzene	4.0	4.0
Semivolatile Organic Compounds (SW8270)		
N-Nitroso-Dimethylamine	10.0	330.0
Phenol	10.0	330.0
bis (2-Chloroethyl) ether	10.0	330.0
2-Chlorophenol	10.0	330.0
1,3-Dichlorobenzene	10.0	330.0
1,4-Dichlorobenzene	10.0	330.0
Benzyl Alcohol	10.0	330.0
1,2-Dichlorobenzene	10.0	330.0

TABLE H.1 (ES Berkeley Laboratory)-Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method)	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Semivolatile Organic Compounds (SW8270)		
2-Methylphenol	10.0	330.0
bis (2-Chloroisoprpoyl) ether	10.0	330.0
4-Methylphenol	10.0	330.0
N-Nitroso-Di-n-Propylamine	10.0	330.0
Hexachloroethane	10.0	330.0
Nitrobenzene	10.0	330.0
Isophorone	10.0	330.0
2-Nitrophenol	10.0	330.0
2,4-Dimethylphenol	10.0	330.0
bis (2-Chloroethoxy) methane	10.0	330.0
2,4-Dichlorophenol	10.0	330.0
Benzoic Acid	25.0	830.0
1,2,4-Trichlorobenzene	10.0	330.0
Napthalene	10.0	330.0
4-Chloroaniline	10.0	330.0
Hexachlorobutadiene	10.0	330.0
4-Chloro-3-Methylphenol	10.0	330.0
2-Methylnapthalene	10.0	330.0
Hexachlorocyclopentadiene	10.0	330.0
2,4,6-Trichlorophenol	10.0	330.0
2,4,5-Trichlorophenol	25.0	830.0
2-Chloronapthalene	10.0	330.0
2-Nitroaniline	25.0	330.0
Dimethylphthalate	10.0	330.0
Acenapthylene	10.0	330.0
2,6-Dinitrotoluene	10.0	330.0
3-Nitroaniline	25.0	830.0
Acenapthene	10.0	330.0
2,4-Dinitrophenol	25.0	830.0
Dibenzofuran	10.0	330.0
4-Nitrophenol	25.0	830.0
2,4-Dinitrotoluene	10.0	330.0
Fluorene	10.0	330.0
Diethylphthalate	10.0	330.0

TABLE H.1 (ES Berkeley Laboratory)-Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD BASE
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method)	Sample *Quantitation Limit Water (µgL)	Sample *Quantitation Limit Soil (µg/kg)
Semivolatile Organic Compounds (SW8270)		
4-Chlorophenol-phenylether	10.0	330.0
4-Nitroaniline	25.0	830.0
4,6-Dinitro-2-Methylphenol	25.0	830.0
N-Nitrosodiphenylamine	10.0	330.0
4-Bromophenyl-phenylether	10.0	330.0
Hexachlorobenzene	10.0	330.0
Pentachlorophenol	25.0	830.0
Phenanthrene	10.0	330.0
Anthracene	10.0	330.0
Di-n-Butylphthalate	10.0	330.0
Fluoranthene	10.0	330.0
Pyrene	10.0	330.0
Butylbenzylphthalate	10.0	330.0
Benzo (a) Anthracene	10.0	330.0
3,3'-Dichlorobenzadiene	20.0	660.0
Chrysene	10.0	330.0
bis (2-Ethylhexyl) Phthalate	10.0	330.0
Di-n-octylphthalate	10.0	330.0
Benzo (b) Fluoranthene	10.0	330.0
Benzo (k) Fluoranthene	10.0	330.0
Benzo (a) Pyrene	10.0	330.0
Ideno (1,2,3-cd) Pyrene	10.0	330.0
Dibenz (a,h) Anthracene	10.0	330.0
Benzo (g,h,i) Perylene	10.0	330.0
Priority-Pollutant Metals		
Antimony (SW6010)	11.0	1100.0
Arsenic (SW7060)	1.0	2000.0
Beryllium (SW6010)	1.0	330.0
Cadmium (SW6010)	1.0	1000.0
Chromium (SW6010)	2.0	2000.0
Copper (SW6010)	2.0	2000.0

TABLE H.1 (ES Berkeley Laboratory)-Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Parameter (method)		
Priority-Pollutant Metals		
Lead (SW7421)	2.2	2000.0
Mercury (SW7470/7471)	0.03	20.0
Nickel (SW6010)	3.0	3000.0
Selenium (SW7740)	1.0	280.0
Silver (SW6010)	3.0	340.0
Thallium (SW7841)	2.2	390.0
Zinc (SW6010)	1.0	1000.0
TRPH (E418.1)	1000.0	10000.0
Pesticides/PCB (SW8080)		
Aldrin	0.04	1.30
Alpha-BHC	0.03	1.00
Beta-BHC	0.06	2.00
Delta-BHC	0.09	3.00
Gamma-BHC	0.04	1.30
Chlordane	0.14	4.70
4,4'-DDD	0.11	3.70
4,4-DDE	0.04	1.30
4,4-DDT	0.12	4.00
Dieldrin	0.02	0.70
Endosulfan I	0.14	4.70
Endosulfan II	0.04	1.30
Endosulfan Sulfate	0.66	22.00
Endrin	0.06	2.00
Endrin Aldehyde	0.23	7.70
Endrin Keytone	NA	4.00
Heptachlor	0.03	1.00
Heptachlor Epoxide	0.83	27.70
Methoxychlor	1.80	60.00
Toxaphene	2.40	80.00

**TABLE H.1 (ES Berkeley Laboratory)-Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH**

Parameter (method)	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Pesticides/PCB (SW8080)		
PCB-1016	0.10	3.30
PCB-1221	0.40	13.00
PCB-1232	0.30	10.00
PCB-1242	0.20	6.70
PCB-1248	0.20	6.70
PCB-1254	0.20	6.70
PCB-1260	0.20	6.70

* **Lowest quantitation limit established by the analytical laboratory. These limits are matrix dependent and were not always achieved due to moisture considerations (soil matrix interference.**

TABLE H.2 (DataChem Laboratories)
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method)	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Halogenated Compounds (SW8010) and Aromatic Compounds (SW8020)		
Chloromethane	0.5	0.5
Bromomethane	0.5	0.5
Dichlorodifluoromethane	0.5	0.5
Vinyl Chloride	0.5	0.5
Chloroethane	0.5	0.5
Methylene Chloride	0.5	0.5
Trichlorofluoromethane	0.5	0.5
1,1-Dichloroethene	0.5	0.5
1,1-Dichloroethane	0.5	0.5
trans-1,2-Dichloroethene	0.5	0.5
Chloroform	0.5	0.5
1,2-Dichloroethane	0.5	0.5
1,1,1-Trichloroethane	0.5	0.5
Carbon Tetrachloride	0.5	0.5
Bromodichloromethane	0.5	0.5
1,2-Dichloropropane	0.5	0.5
trans-1,3-Dichloropropene	0.5	0.5
Trichloroethene	0.5	0.5
Dibromochloromethane	0.5	0.5
1,1,2-Trichloroethane	0.5	0.5
2-Chloroethylvinyl Ether	0.5	0.5
Bromoform	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5	0.5
Tetrachloroethene	0.5	0.5
Chlorobenzene	0.5	0.5
1,1,1,2-Tetrachloroethane	0.5	0.5
Benzene	0.5	0.5
Chlorobenzene	0.5	0.5
1,2-Dichlorobenzene	0.5	0.5
1,3-Dichlorobenzene	0.5	0.5
1,4-Dichlorobenzene	0.5	0.5
Ethylbenzene	0.5	0.5
Toluene	0.5	0.5
m-Xylene and p-Xylene	0.5	0.5

TABLE H.2 (DataChem Laboratories) -Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Parameter (method)		
Halogenated Compounds (SW8010) and Aromatic Compounds (SW8020)		
o-Xylene and Styrene	0.5	0.5
Semivolatile Organic Compounds (SW8270)		
N-Nitroso-Dimethylamine	10.0	660.0
Phenol	10.0	660.0
bis (2-Chloroethyl) ether	10.0	660.0
2-Chlorophenol	10.0	660.0
1,3-Dichlorobenzene	10.0	660.0
1,4-Dichlorobenzene	10.0	660.0
Benzyl Alcohol	20.0	1300.0
1,2-Dichlorobenzene	10.0	660.0
2-Methylphenol	10.0	660.0
bis (2-Chloroisoprpoyl) ether	10.0	660.0
4-Methylphenol	10.0	660.0
N-Nitroso-Di-n-Propylamine	10.0	660.0
Hexachloroethane	10.0	660.0
Nitrobenzene	10.0	660.0
Isophorone	10.0	660.0
2-Nitrophenol	10.0	660.0
2,4-Dimethylphenol	10.0	660.0
bis (2-Chloroethoxy) methane	10.0	660.0
2,4-Dichlorophenol	10.0	660.0
Benzoic Acid	50.0	3300.0
1,2,4-Trichlorobenzene	10.0	660.0
Napthalene	10.0	660.0
4-Chloroaniline	20.0	660.0
Hexachlorobutadiene	10.0	660.0
4-Chloro-3-Methylphenol	20.0	1300.0
2-Methylnapthalene	10.0	660.0
Hexachlorocyclopentadiene	10.0	660.0
2,4,6-Trichlorophenol	10.0	660.0
2,4,5-Trichlorophenol	10.0	660.0

TABLE H.2 (DataChem Laboratories) -Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method)	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Semivolatile Organic Compounds (SW8270)		
2-Chloronapthalene	10.0	660.0
2-Nitroaniline	50.0	3300.0
Dimethylphthalate	10.0	660.0
Acenapthylene	10.0	660.0
2,6-Dinitrotoluene	10.0	660.0
3-Nitroaniline	50.0	3300.0
Acenapthene	10.0	660.0
2,4-Dinitrophenol	50.0	3300.0
Dibenzofuran	10.0	660.0
4-Nitrophenol	25.0	3300.0
2,4-Dinitrotoluene	10.0	660.0
Fluorene	10.0	660.0
Diethylphthalate	10.0	660.0
4-Chlorophenol-phenylether	10.0	660.0
4-Nitroaniline	50.0	3300.0
4,6-Dinitro-2-Methylphenol	50.0	3300.0
N-Nitrosodiphenylamine	10.0	660.0
4-Bromophenyl-phenylether	10.0	660.0
Hexachlorobenzene	10.0	660.0
Pentachlorophenol	50.0	3300.0
Phenanthrene	10.0	660.0
Anthracene	10.0	660.0
Di-n-Butylphthalate	10.0	660.0
Fluoranthene	10.0	660.0
Pyrene	10.0	660.0
Butylbenzylphthalate	10.0	660.0
Benzo (a) Anthracene	10.0	660.0
3,3-Dichlorobenzadiene	20.0	1300.0
Chrysene	10.0	660.0
bis (2-Ethylhexyl) Phthalate	10.0	660.0
Di-n-octylphthalate	10.0	660.0
Benzo (b) Fluoranthene	10.0	660.0
Benzo (k) Fluoranthene	10.0	660.0
Benzo (a) Pyrene	10.0	660.0

TABLE H.2 (DataChem Laboratories) -Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Parameter (method)		
Semivolatile Organics (SW8270)		
Ideno (1,2,3-cd) Pyrene	10.0	660.0
Dibenz (a,h) Anthracene	10.0	660.0
Benzo (g,h,i) Perylene	10.0	660.0
Priority-Pollutant Metals		
Antimony (SW6010)	NA	NA
Arsenic (SW7060)	NA	NA
Beryllium (SW6010)	NA	NA
Cadmium (SW6010)	NA	NA
Chromium (SW6010)	NA	NA
Copper (SW6010)	NA	NA
Lead (SW7421)	NA	NA
Mercury (SW7470/7471)	NA	NA
Nickel (SW6010)	NA	NA
Selenium (SW7740)	NA	NA
Silver (SW6010)	NA	NA
Thallium (SW7841)	NA	NA
Zinc (SW6010)	NA	NA
TRPH (E418.1)	100.0	10000.0
Pesticides/PCB (SW8080)		
Parameter		
Aldrin	0.05	1.70
Alpha-BHC	0.05	1.70
Beta-BHC	0.05	1.70
Delta-BHC	0.10	1.70
Lindane	0.05	1.70
Chlordane	0.10	4.70
4,4'-DDD	0.10	3.30

TABLE H.2 (DataChem Laboratories) -Continued
TARGET COMPOUNDS AND DETECTION LIMITS
151st AREFG UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter (method)	Sample *Quantitation Limit Water (µg/L)	Sample *Quantitation Limit Soil (µg/kg)
Pesticides/PCB (SW8080)		
4,4-DDE	0.05	3.30
4,4-DDT	0.10	3.30
Dieldrin	0.05	3.30
Endosulfan I	0.10	1.70
Endosulfan II	0.05	3.30
Endosulfan Sulfate	0.50	3.30
Endrin	0.10	3.30
Endrin Aldehyde	0.20	3.30
Heptachlor	0.05	1.70
Heptachlor Epoxide	1.00	1.70
Toxaphene	2.00	170.0
Aroclor-1016	1.00	33.0
Aroclor-1221	1.00	33.0
Aroclor-1232	1.00	33.0
Aroclor-1242	1.00	33.0
Aroclor-1248	1.00	33.0
Aroclor-1254	1.00	33.0
Aroclor-1260	1.00	33.0
Methoxychlor	2.00	17.0

*** Lowest quantification limits estabished by the analytical laboratory.**
NA Not applicable; detection limits varied, see data tables for limits.

APPENDIX I
HYDROGEOLOGICAL METHODS AND DATA

APPENDIX I

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APPENDIX I
HYDROGEOLOGICAL METODS AND DATA

I.1 FIELD METHODS

Hydraulic conductivity was measured at 12 monitoring wells installed at seven sites at the UANG Base in March 1993. Slug test data were collected with an In-Situ Inc.-brand Hermit Environmental Data Logger (model 1000C) using an In-Situ Inc. level-type pressure transducer (Model PXD 260). The quadratic coefficients of the transducer used for the slug tests were: scale-19.836, offset-0.168, and linearity-0.105. An accuracy test was performed on the transducer prior to conducting slug tests in the field. The test involved marking one foot intervals on the line, then taking depth readings as the transducer was pulled up to each mark. The total difference after 3 readings, or 3 feet total, was only about 1 %. This difference incorporates human error in the precision of measurement. Human error is probably more significant than the mechanical variation in the transducer.

The pressure transducer was allowed to thermally equilibrate with monitoring well groundwater for about 10 to 15 minutes before conducting the slug tests. The reference datum for the tests was the static water level (SWL). The data logger setting was top of casing (TOC) for the tests and the SWL option was set to zero so that positive displacement was measured into the well from the SWL (0 foot datum). The log time setting was used on the data logger so that early time-recovery data were clearly distinguishable on the resulting graphs (this is important for aquifers anticipated to have relatively high hydraulic conductivity values).

The slug tests were conducted by suddenly removing a volume of water from the wells and then measuring the time-recovery of the static water level using the data logger and pressure transducer. A slug bailer with a volume of approximately 1.1 linear feet in a 2-inch-diameter well was used to remove the volume of water. A removed volume of 1.1 linear feet of well was generally about 10 % of the total well volume (10-foot water column). This volume is in agreement with examples given by Bouwer and Rice (1976). After putting the slug bailer into the wells, the displaced static water level was allowed to equilibrate prior to conducting the tests. Once the water level subsided to the original level, one bailer volume was suddenly removed, and the test was initiated. Only slug withdrawal tests were performed.

I.2 METHODS OF ANALYSIS

The Bouwer and Rice method (1976) was used to generate hydraulic conductivity (K) values from the slug test data. Calculations were automated using AQTESOLV™ computer software version 1.1 (Geraghty and Miller Modeling Group, 1991).

The Bouwer and Rice (1976) slug test method permits measurement of the saturated hydraulic conductivity (K) of aquifer porous media at an effective radial distance from the test well and is based on observations from a single test well. The basis of the method is a time-recovery relationship that measures the response of the aquifer to a sudden withdrawal or injection of a slug of water. The method was developed from a series of analog tests and uses both theory and empirically derived coefficients (Bouwer and Rice, 1976). This method is applicable to a wide range of well geometries and is applicable to completely or partially penetrating wells in an unconfined aquifer. The Bouwer and Rice (1976) method may also be used for slug tests on wells in confined aquifers if water enters the aquifer from the upper confining layer through compression or leakage (Bouwer and Rice, 1976).

The governing equation (1) of the Bouwer and Rice (1976) slug test method is a modification of the Theim (1906) equation of steady state flow to wells. The assumptions are that (1) drawdown of the water table around the well is negligible, (2) flow in the capillary fringe above the saturated zone can be ignored, (3) head losses as water enters the well are negligible, and (4) the aquifer is homogeneous and isotropic. A definition of terms and a schematic for equation (1) follow.

GOVERNING EQUATION:

$$\ln s_o - \ln s_t = \frac{2KLt}{r_c^{\,2} \ln(r_e / r_w)} \qquad (1)$$

where:

s_o = initial drawdown in well due to instantaneous removal of water from well [L]

s_t = drawdown in well at time (t) [L]

L = length of well screen [L]

r_c = radius of well casing [L]

$\ln(r_e/r_w)$ = empirical "shape factor" determined from tables provided in Bouwer and Rice (1976)

r_e = equivalent radius over which head loss occurs [L]

r_w = radius of well (including gravel pack) [L]

H = static height of water in well [L]

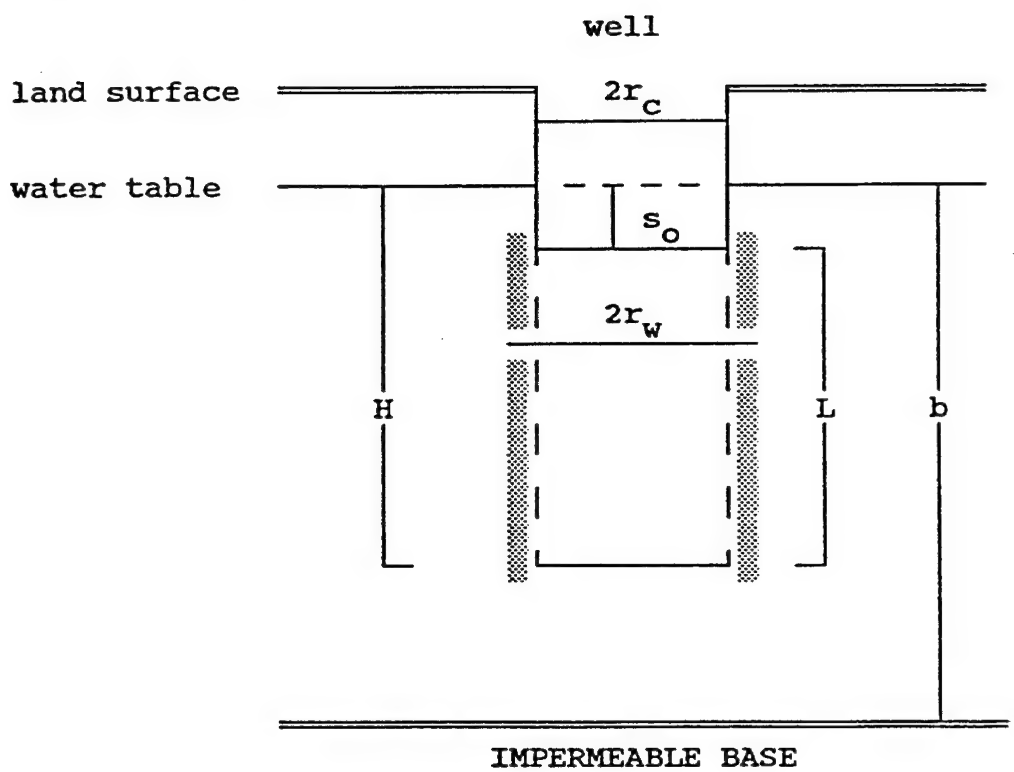
b = saturated thickness of aquifer [L]

SOLUTION:

$$K = \frac{r_c^{\,2} \ln(r_e / r_w)}{2L} \quad \frac{1}{t} \ln \frac{s_o}{s_t} \tag{2}$$

SCHEMATIC

DEFINITION OF TERMS:



The slug test field data should yield a straight line when plotted as ln s_t (residual drawdown) versus time (t). The term $(1/t)$ ln (s_o/s_t) in equation (2) is then obtained from the best-fitting straight line plot of residual drawdown (s_t) versus time (t). The value of ln (r_e/r_w) is dependent on H, L, b, and r_w and is evaluated from empirically-derived curves and related coefficients (Bouwer and Rice, 1976). The hydraulic conductivity (K) is then obtained from equation (2).

The time-recovery data were imported from the data logger to an input file for AQTESOLV. The Bouwer and Rice (1976) method was chosen for hydraulic conductivity calculations. The data parameters H, L, b, r_w, and r_c are manually input into the AQTESOLV program for each individual test, and the program calculates coefficients and the resulting function $\ln(r_e/r_w)$. The program automatically plots the time-recovery curve on screen and then the best-fit straight line is automatically or manually matched to the curve. After the straight line segment is matched to the time-recovery data, the program is executed, and the hydraulic conductivity is calculated from the input parameters.

The value of hydraulic conductivity is sensitive to the slope of the curve-matched straight line. Therefore, proper orientation of the best fit straight line to the time-recovery data is imperative to obtaining precise and accurate values of hydraulic conductivity. Review of the governing equation (1) and sensitivity tests of Bouwer and Rice (1976) input parameters conducted during AQTESOLV program execution indicates that the analysis is most sensitive to the parameters of well screen length (L) and the well casing radius (r_c), and is less affected by the static height of the water in the well (H), the saturated aquifer thickness (b), and the radius of the well plus gravel pack (r_w).

I.3 SLUG TEST RESULTS

The indication of a good slug test is a definite straight line segment in the initial time-recovery data curve. AQTESOLV generated slug test time-recovery curves and results for the UANG IRP site monitoring wells are presented at the end of this appendix. An examination of the curves indicates that the field slug test results are precise and accurate within the constraints of the analytical method. Some hydraulic conductivity values were also calculated manually as a means of validating the AQTESOLV software. Manual calculations were in agreement with AQTESOLV solutions.

It is possible to get two distinct straight-line segments in the time-recovery curves. This is the result of well borehole effects caused by a higher hydraulic conductivity of the sand or gravel pack relative to the aquifer media (Bouwer, 1989). In this case, the first straight-line segment is steeper (greater slope) than the second straight-line segment. The second straight-line segment is then representative of the aquifer formation hydraulic conductivity. This segment represents the test interval after water contained in the gravel pack reaches equilibrium with the water in the well casing and flow to the well slows down. Separate and distinct straight-line segments are not apparent in the time-recovery curves of the UANG slug tests, and sand pack effects are not manifest on the curves. In

fact, some of the formation hydraulic conductivity values may equal or exceed the hydraulic conductivity of the 20-40 Colorado silica sand pack used in construction of the monitoring wells.

The value of y_0 (s_o by definition in the equations and schematic above) on the AQTESOLV generated time-recovery curves and results diagrams provided at the end of this appendix is the y-intercept of the curve-matched straight line and represents the best-fit line drawdown at time zero. The value of H_0 on the diagrams is the input value of y_0 (removed slug bailer volume), and has no bearing on the solution. The values of the other input parameters are given on the diagrams. The definition of these terms was discussed above and is presented in the equations and schematic. Where the static height of water in the well (*H*) of the screen is less than the intake length of the well screen (*L*), the value of (*L*) is equal to (*H*). Generally, the value of (*H*) was greater than (*L*) for the tests; ie., the water level was above the top of the screen in the cased portion of the monitoring wells. The saturated thickness of the aquifer (*b*) is the least-exact input parameter for these analyses, but as stated above, the Bouwer and Rice (1976) solution for the site well geometries is not that sensitive to (*b*). The saturated thickness (*b*) is considered to be the vertical distance between the first extensive clay layer beneath the base and the static water level. The top of this clay layer is considered an impermeable boundary for calculations and is contacted at an average depth of approximately 20 feet BLS.

I.4 HYDRAULIC CONDUCTIVITY, FLOW RATES, AND VELOCITIES

Aquifer hydraulic conductivities in the vicinity of UANG IRP site monitoring wells are given in Table I.1. Results of the tests indicate a significant variation in hydraulic conductivity values at the wells, and therefore, variation in aquifer properties at the Base. Although slug tests yield only an estimation of aquifer hydraulic conductivity, the relative difference in hydraulic conductivity values obtained from slug tests at the site wells is considered to represent true spatial variation in aquifer properties.

An examination of Darcy's equation ($Q=KiA$) shows that the value of hydraulic conductivity (*K*), also called the proportionality constant, is a controlling factor in the determination of volumetric flow rate (*Q*). Because of the variation in (*K*) at the Base, the flow rate at the sites is also highly variable. However, since the value of (*K*) in Darcy's Law is constant and the cross-sectional area of saturated flow (*A*) is nearly constant, the hydraulic gradient (*i*) which is variable and is the most dynamic factor, is the driving mechanism of groundwater flow.

The volumetric flow rates (*q*) per unit width of saturated aquifer thickness (*b*) were calculated for the sites based on the temporal hydraulic gradients measured on 16 March 1993. Results are presented in Table I.2. The hydraulic conductivity value used in calculating the flow rates is the average (*K*) of the aquifer between the wells of concern at each site. The hydraulic gradient was established in a flow path perpendicular to

groundwater elevation equipotentials at the monitoring wells. Groundwater flow rates at the Base are subject to change as the hydraulic gradients change.

The velocity of groundwater flow is proportional to the hydraulic gradient and hydraulic conductivity, according to Darcy's Law. Groundwater flow velocities (v) are estimated by the equation ($v=Ki/n$), but velocities may be less accurate than volumetric flow rates due to an assumption for the effective porosity (n). When calculating flow velocities through a porous medium, the effective porosity is used to modify the amount of aquifer surface area available for flow. This is because water only moves through connected pore space making up the surface area. Examination of the equation ($v=Ki/n$) shows that the true velocity, or average linear velocity (v), increases with decreasing effective porosity (n). A generally-assumed value of effective porosity for unconsolidated sediments is 30 %. Fetter (1988) suggests that the effective porosity and total porosity (ratio of the total void volume to total volume) are virtually the same for most sediments. In other words, nearly all of the porosity or void space in a sediment is available for groundwater flow.

Values of average linear velocity were calculated notwithstanding the effective porosity assumption. Estimated groundwater flow velocities (v) for the values of (K) and (i) given in Table I.2 were determined from the equation ($v=Ki/n$); where (n) is the effective porosity. At Site 3 for example, considering the calculated average hydraulic conductivity (K) of 36.9 ft/day and a hydraulic gradient of 2.0×10^{-3} ft/ft, the corresponding average linear velocity was approximately 0.25 ft/day, assuming an effective porosity of 30 %. The actual porosities of sands may be less than 30%, and the porosities of silts and clays may be greater than 30%. Therefore, the actual average linear velocity of groundwater at the sites may be greater (sand) or less than (silts and clays) the calculated values, depending on the actual porosities of the saturated aquifer sediments at each of the sites.

TABLE I.1
HYDRAULIC CONDUCTIVITY OF THE POROUS MEDIA IN THE SCREENED INTERVAL OF IRP SITE MONITORING WELLS 151st AREFG, UTAH AIR NATIONAL GUARD SALT LAKE CITY INTERNATIONAL AIRPORT SALT LAKE CITY, UTAH

Well	Hydraulic Conductivity (*K*) (ft/min)	Hydraulic Conductivity(*K*) (ft/day)
BGMW1	3.83E-03	4.26
BGMW2	1.33E-03	1.91
S1MW1	2.29E-03	3.30
S2MW2	3.71E-03	5.34
S2MW1	1.17E-04	0.17
S2MW2	2.38E-03	3.42
S3MW1	1.63E-02	23.40
S3MW2	3.50E-02	50.41
S4MW1	9.99E-04	1.44
S5MW1	1.48E-02	21.28
S6MW1	2.97E-03	4.28
S6MW2	1.42E-03	2.04
S6MW3	3.47E-03	5.00
S6MW4	1.62E-03	2.34
S6MW5	4.90E-03	7.06
S7MW1	7.83E-04	1.13
S7MW2	2.96E-03	5.52
Mean *K* =	5.82E-03	8.37
St Dev	8.79E-03	12.65

TABLE I.2
AVERAGE HYDRAULIC CONDUCTIVITY, HYDRAULIC GRADIENT, FLOW RATE, AND FLOW VELOCITY
16 MARCH 1993
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

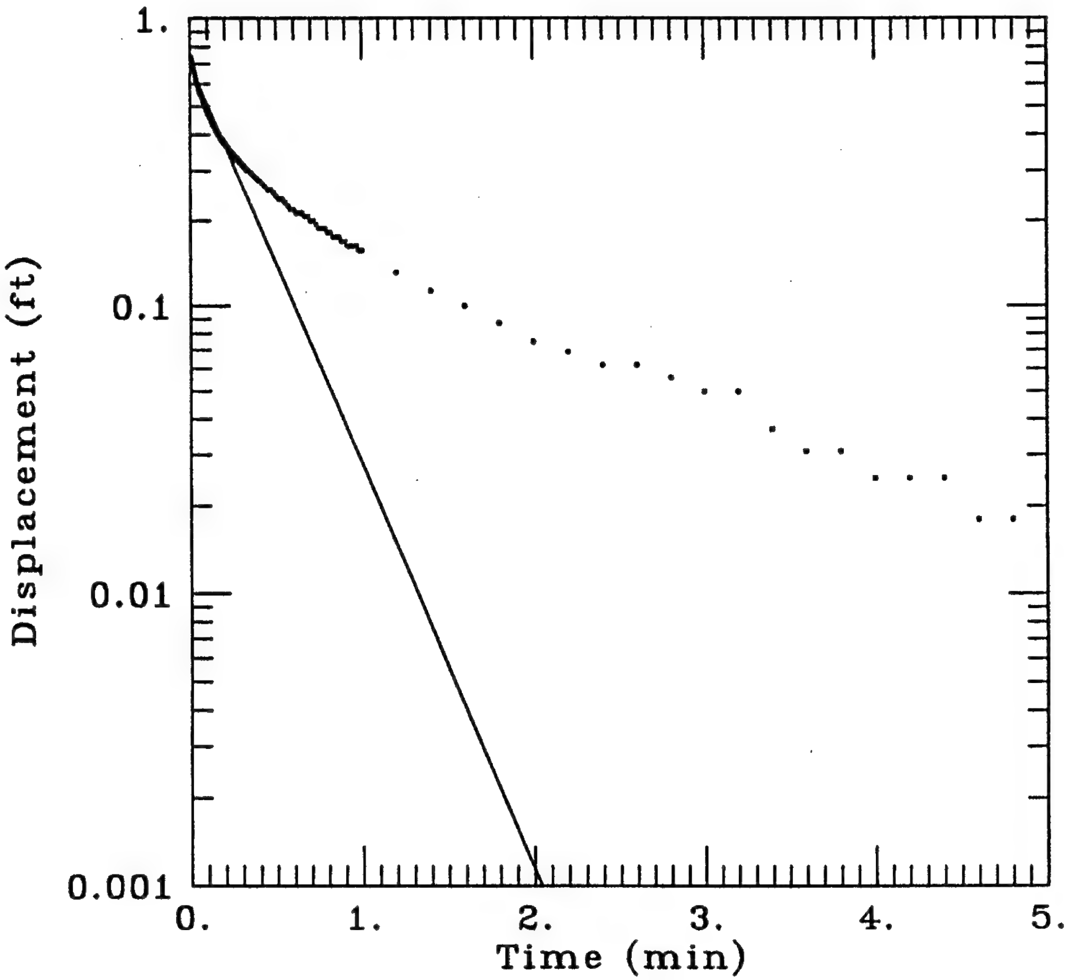
Site	Average Hydraulic Conductivity (*K*) (ft./day)	Flow Path Distance Between Wells (dl) (ft.)	Change in Head Between Wells (dh) (ft.)	Hydraulic Gradient (*i*=dh/dl) (ft./ft.)	Average Saturated Aquifer Thickness (*b*) (ft.)	Flow Rate per Unit Width (q) ($ft.^3$/day/ft.)	Average Linear Velocity (*v*) (ft./day)
Fuel Spill (Site 2) S1MW1-S2MW1	1.74	85.0	0.14	1.65×10^{-3}	15.40	4.41×10^{-2}	0.01
Drum Burial (Site 3) S3MW1-S3MW2	36.90	100	0.20	2.0×10^{-3}	18.50	1.37	0.25
Fire TNG - Area 1 (Site 4) S7MW1-S4MW1	1.29	180	0.01	5.56×10^{-5}	15.50	1.11×10^{-3}	2.39×10^{-4}
Ramp Washdown (Site 6) S6MW2-S6MW3	3.52	650	0.99	1.52×10^{-3}	13.75	7.36×10^{-2}	0.02
Oil Sludge Pond (Site 7) S7MW2-S7MW1	3.33	210	0.35	1.67×10^{-3}	15.00	8.34×10^{-2}	0.02

note: $q=(Kib)$; where q = volumetric flow rate per unit width of aquifer,
K =hydraulic conductivity, i=hydraulic gradient, and b=saturated aquifer thickness
$v=Ki/n$; where v=average linear velocity, K=hydraulic conductivity, i=hydraulic gradient, and n=effective porosity; n=30% for all calculations.

724017\TI-2.xls

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 1

UANG SITE 1 MW1 SLUG TEST



DATA SET:
UAGS1MW1.DAT
03/25/93

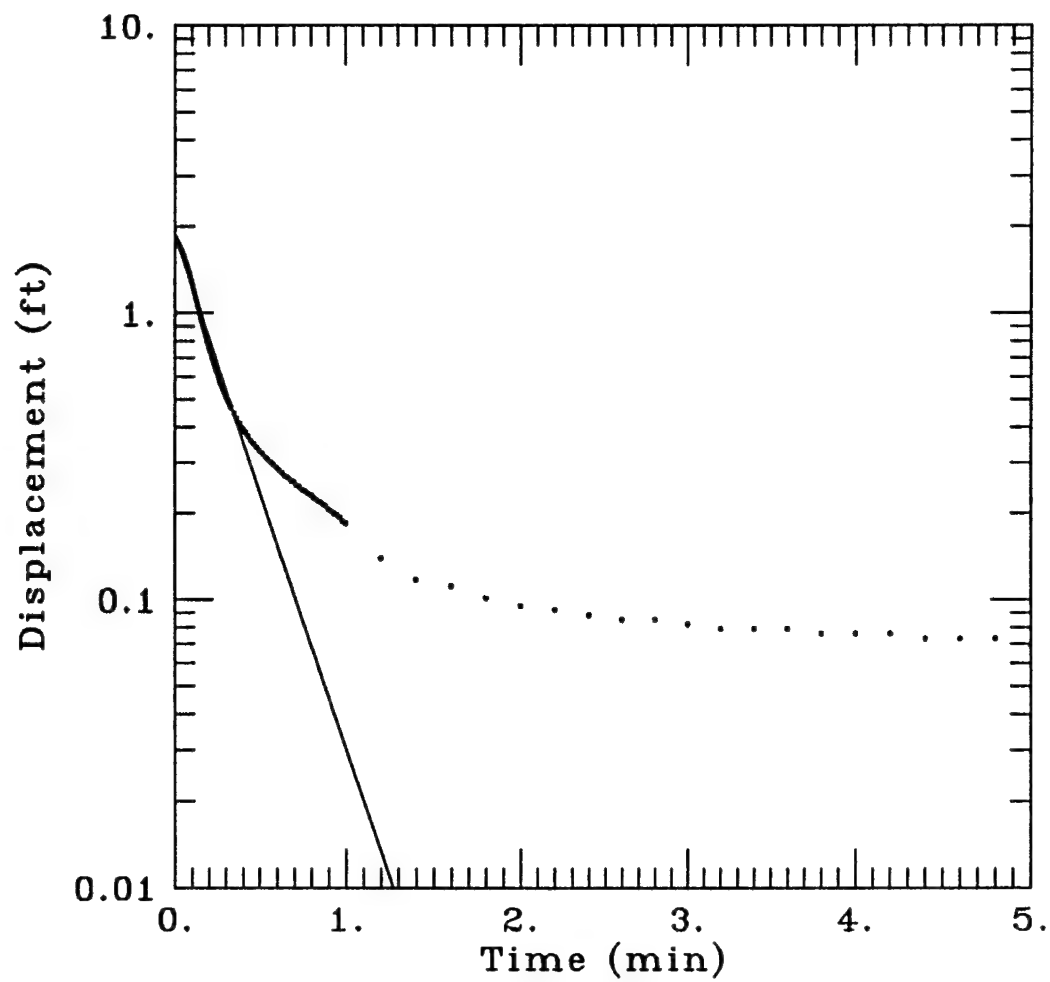
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/4/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.002291 ft/min
y0 = 0.6978 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 15. ft
H = 10. ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 1

UANG SITE 1 MW2 SLUG TEST



DATA SET:
uags1mw2.aqt
09/08/95

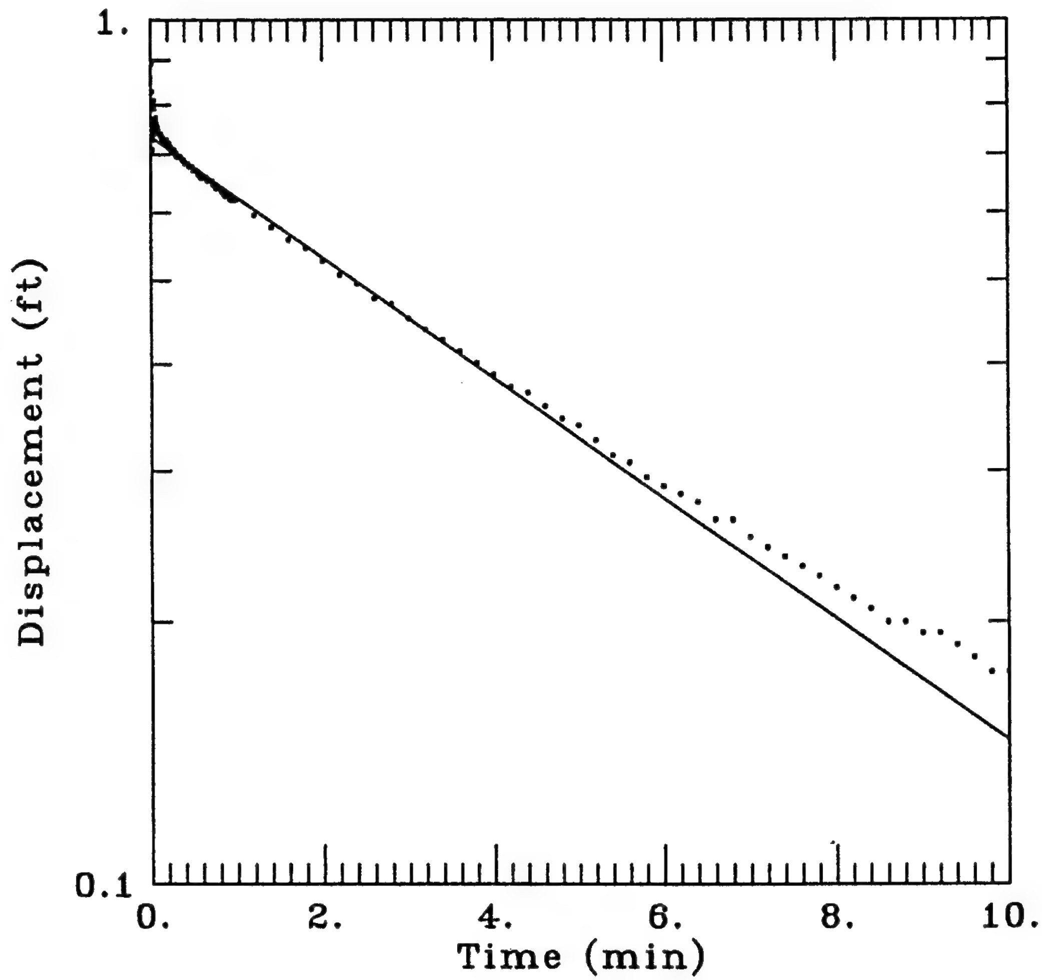
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
9/06/95
TEST WELL:
MW2

ESTIMATED PARAMETERS:
K = 0.003706 ft/min
y0 = 1.872 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.344 ft
L = 7.66 ft
b = 13.8 ft
H = 7.66 ft

ENGINEERING-SCIENCE,INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 2

UANG SITE 2 MW1 SLUG TEST



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03/24/93

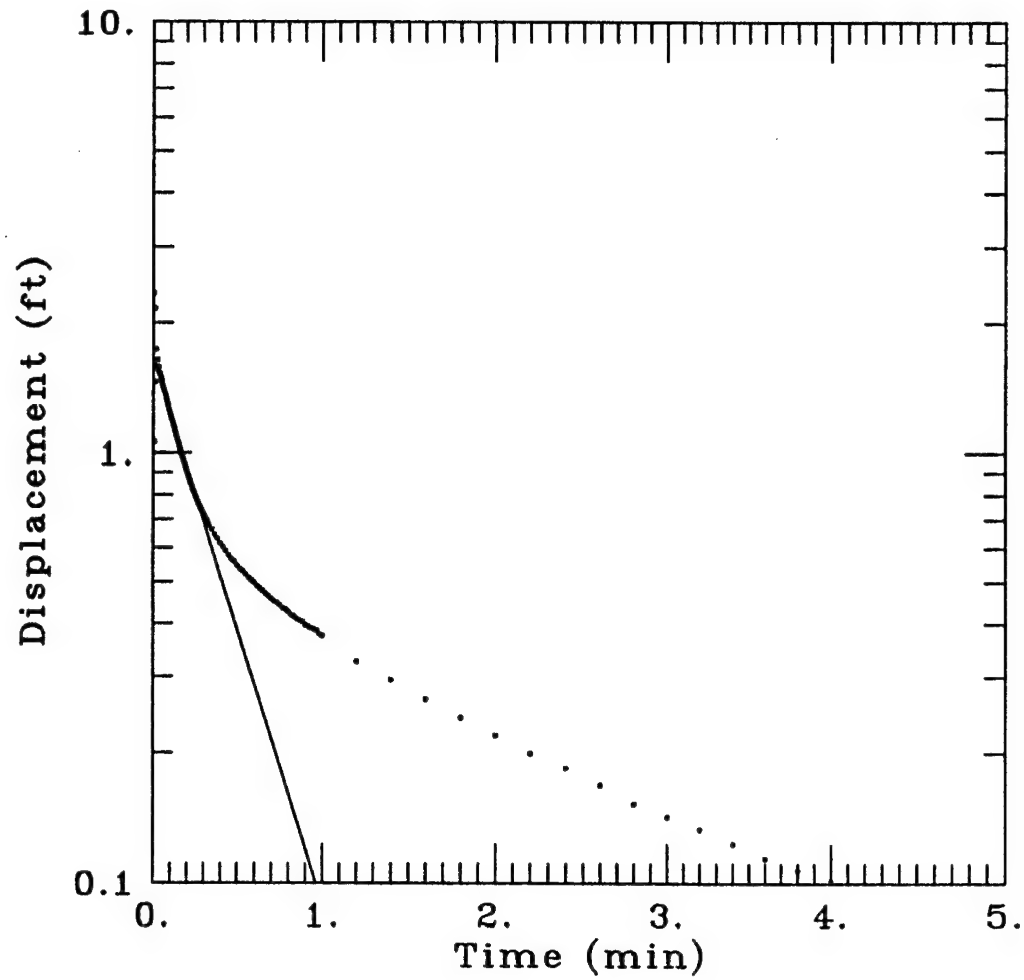
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/5/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.0001171 ft/min
y0 = 0.7341 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 15.75 ft
H = 10.75 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 2

UANG SITE 2 MW2 SLUG TEST



DATA SET:
UAGS2MW2.AQT
09/08/95

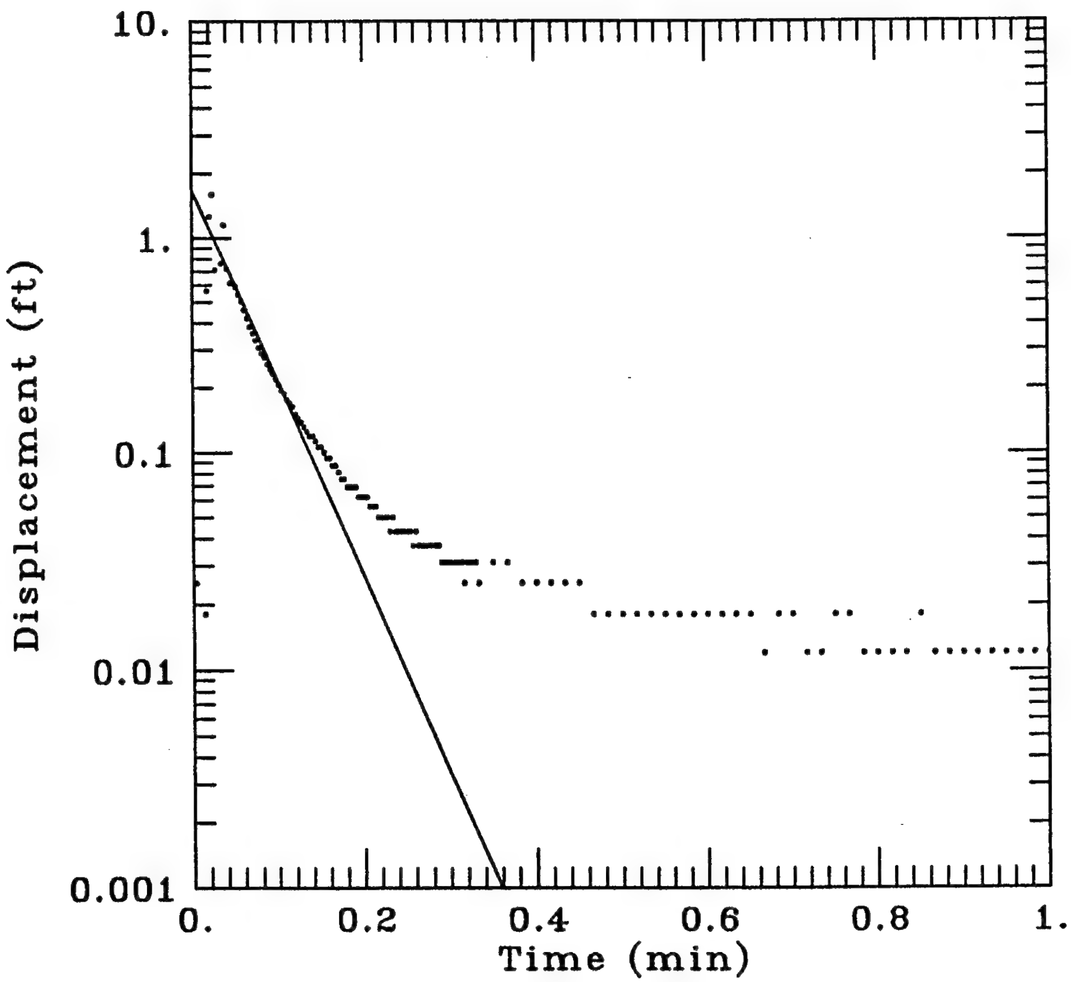
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
9/06/95
TEST WELL:
MW2

ESTIMATED PARAMETERS:
K = 0.002378 ft/min
y0 = 1.665 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.344 ft
L = 9.13 ft
b = 15. ft
H = 9.13 ft

ENGINEERING-SCIENCE,INC.	Client: MARTING MARIETTA
Project No.: UT014	Location: UANG IRP SITE 3

UANG SITE 3 MW1 SLUG TEST



DATA SET:
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03/24/93

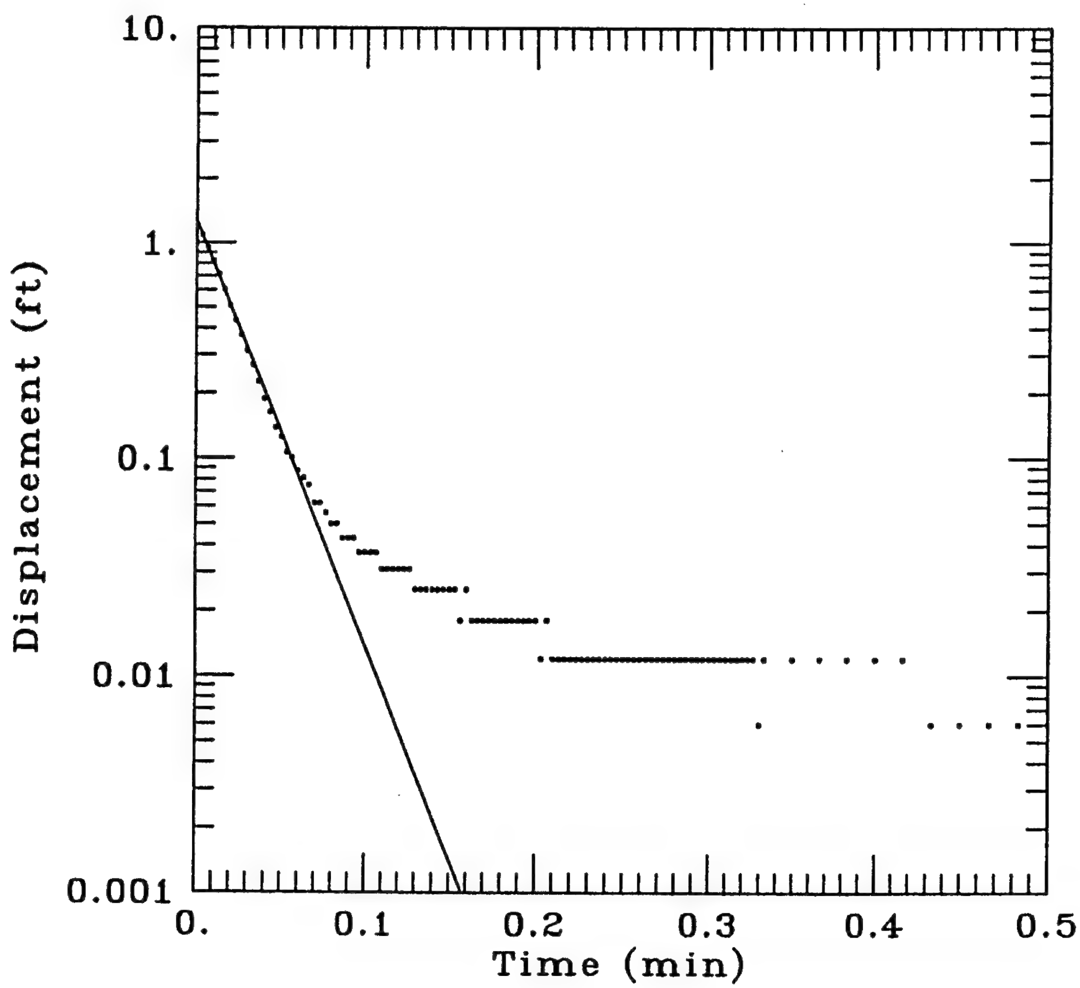
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/10/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.01625 ft/min
y0 = 1.679 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 17. ft
H = 14.25 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 3

SITE 3 MW2 SLUG TEST



DATA SET:
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03/24/93

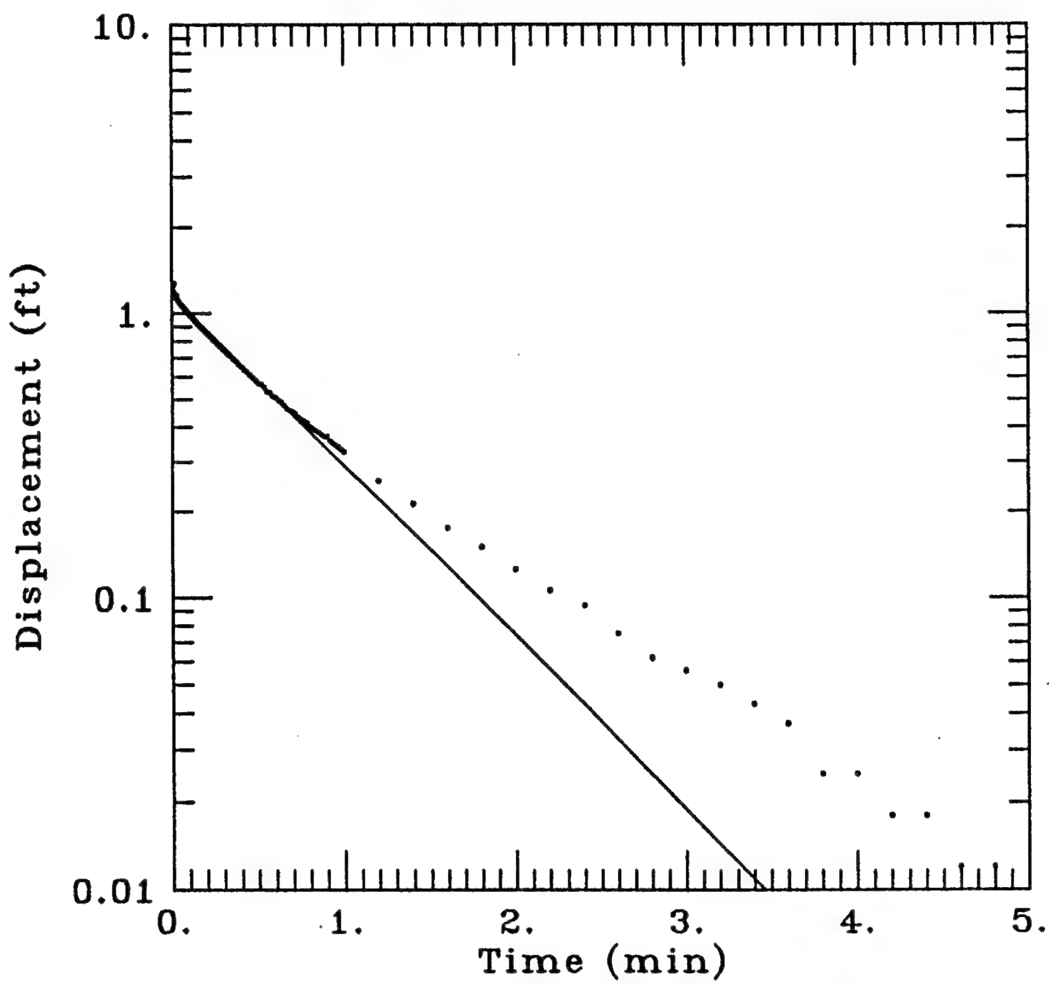
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/10/93
TEST WELL:
MW2

ESTIMATED PARAMETERS:
K = 0.03501 ft/min
y0 = 1.269 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 20. ft
H = 14.67 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 4

UANG SITE 4 MW1 SLUG TEST



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03/24/93

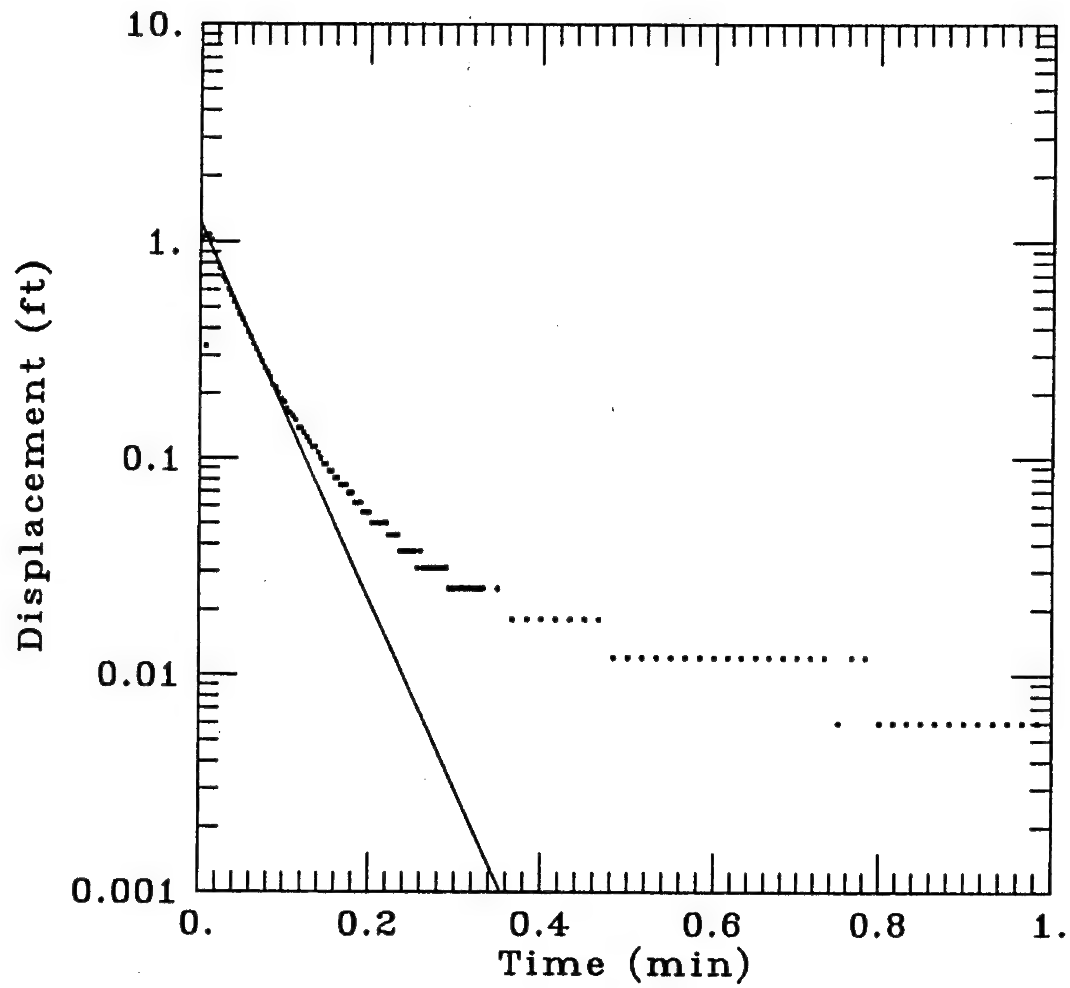
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/5/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.0009989 ft/min
y0 = 1.148 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 16. ft
H = 11. ft

ENGINEERING-SCIENCE,INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 5

UANG SITE 5 MW1 SLUG TEST



DATA SET:
UAGS5MW1.DAT
03/24/93

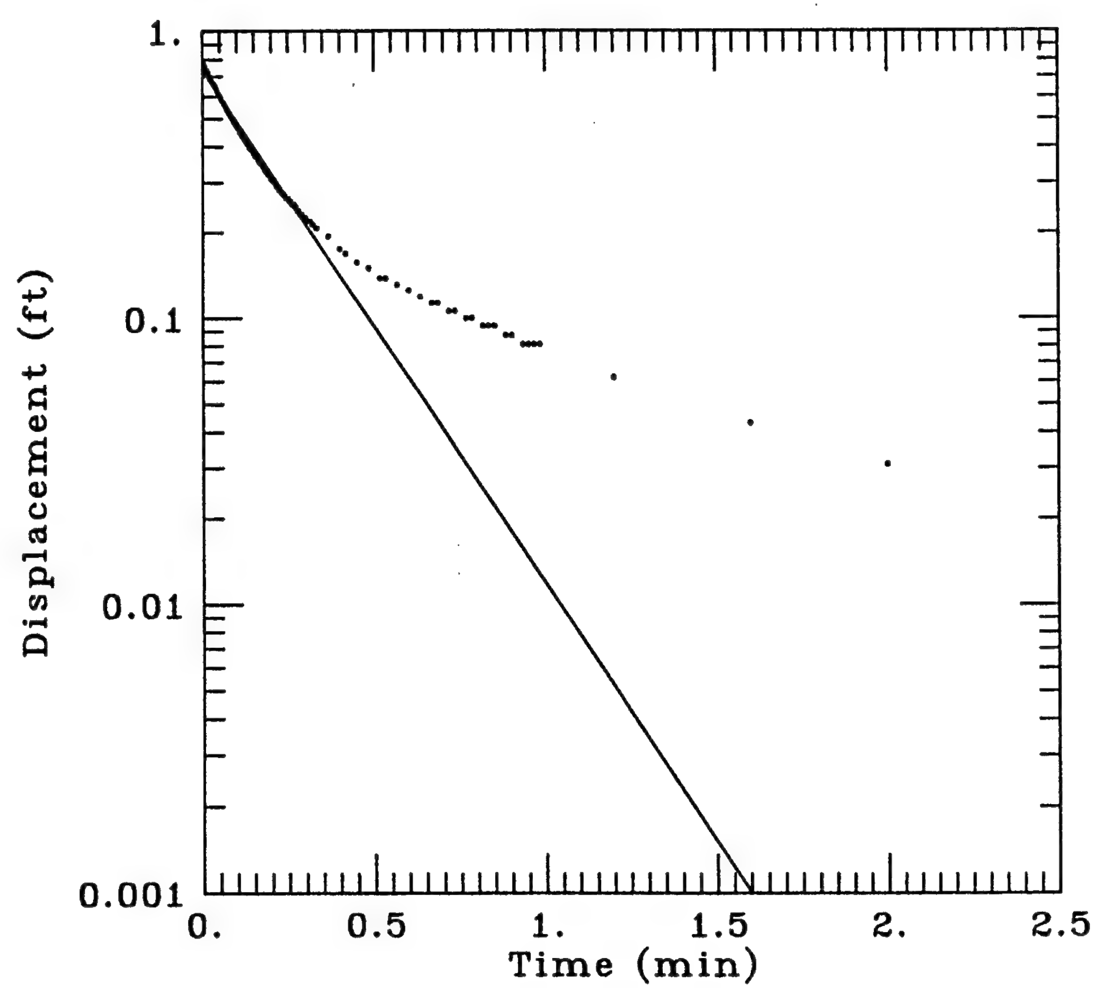
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/9/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.01478 ft/min
y0 = 1.234 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 16.5 ft
H = 11.45 ft

ENGINEERING-SCIENCE, INC.	Client: MARTING MARIETTA
Project No.: UT014	Location: UANG IRP SITE 6

UANG SITE 6 MW1 SLUG TEST



DATA SET:
UAGS6MW1.DAT
03/24/93

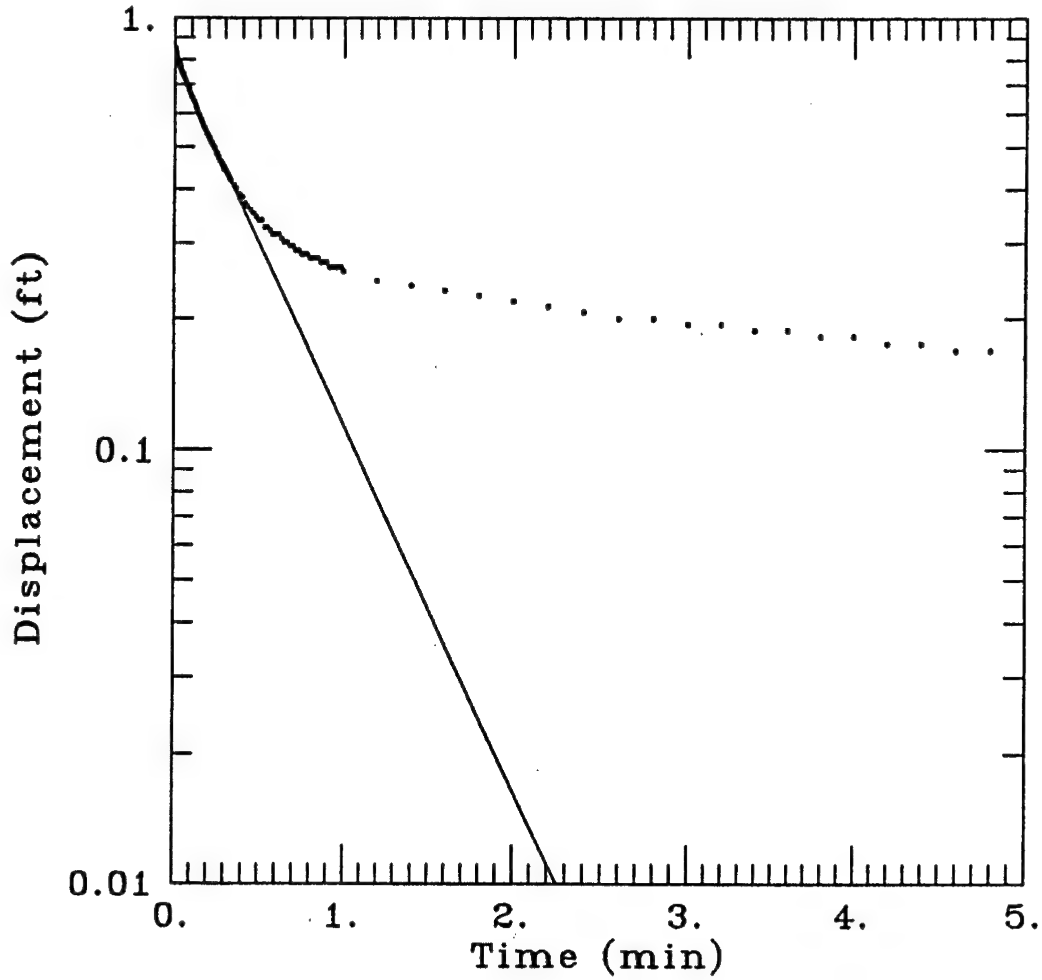
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/8/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.00297 ft/min
y0 = 0.7392 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 15. ft
H = 10.25 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 6

UANG SITE 6 MW2 SLUG TEST



DATA SET:
UAGS6MW2.DAT
03/25/93

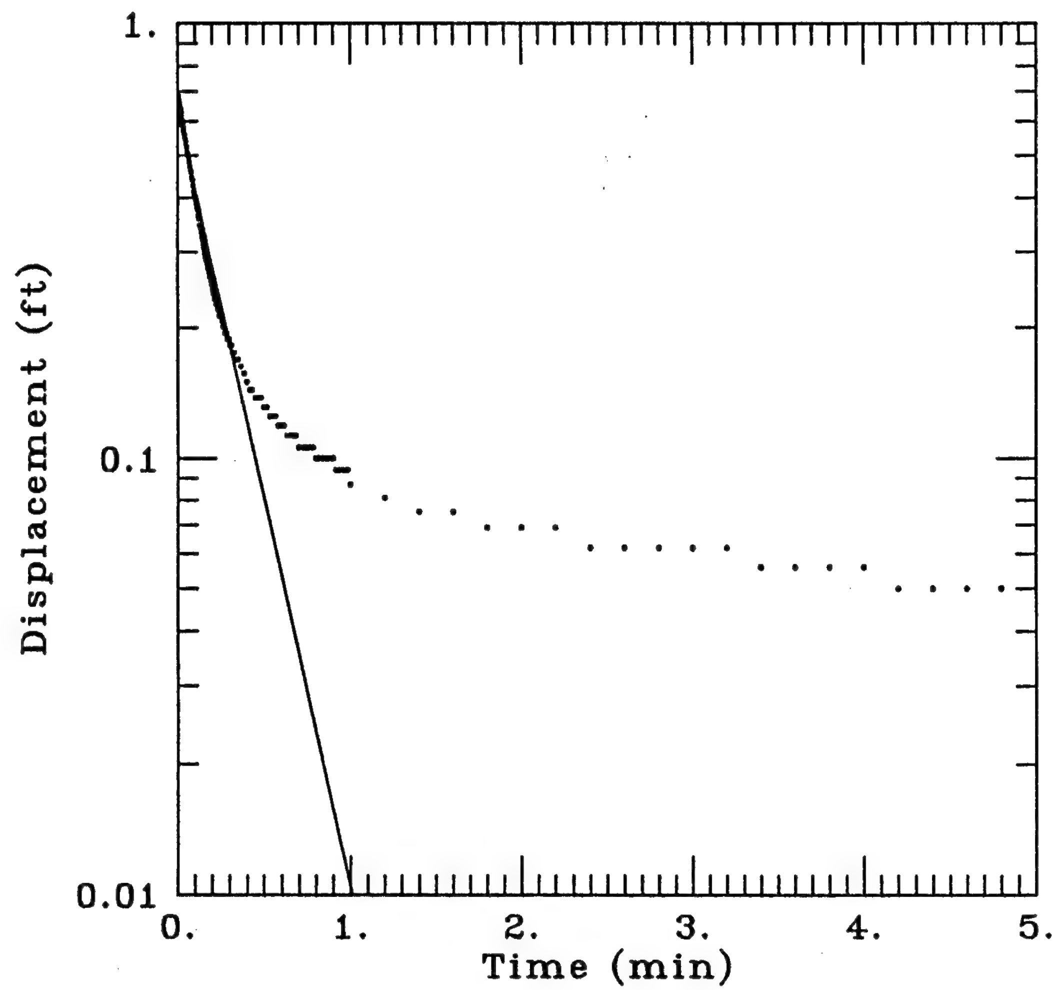
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/8/93
TEST WELL:
MW2

ESTIMATED PARAMETERS:
K = 0.001416 ft/min
y0 = 0.7946 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 9.6 ft
b = 15. ft
H = 9.6 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 6

UANG SITE 6 MW3 SLUG TEST



DATA SET:
UAGS6MW3.DAT
03/25/93

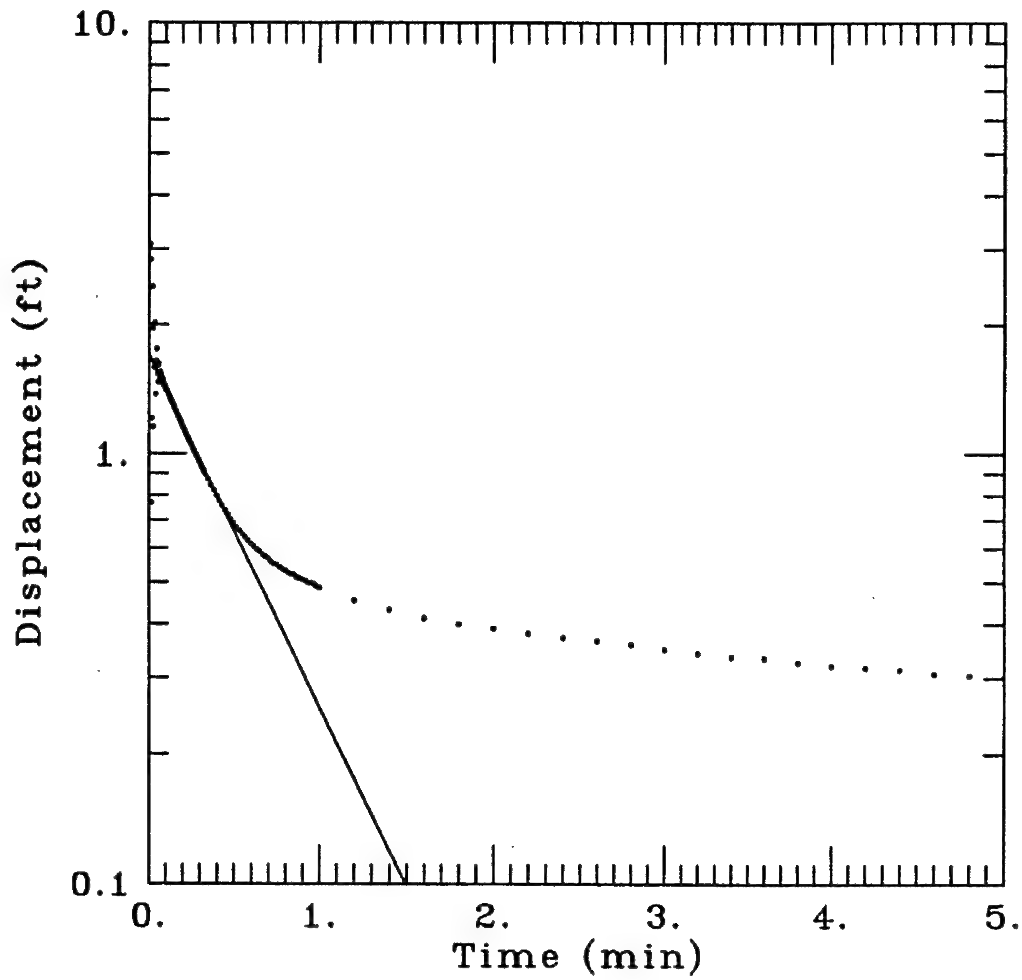
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/8/93
TEST WELL:
MW3

ESTIMATED PARAMETERS:
K = 0.003472 ft/min
y0 = 0.6323 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 7.37 ft
b = 12.5 ft
H = 7.37 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 6

UANG SITE 6 MW4 SLUG TEST



DATA SET:
uags6mw4.aqt
09/08/95

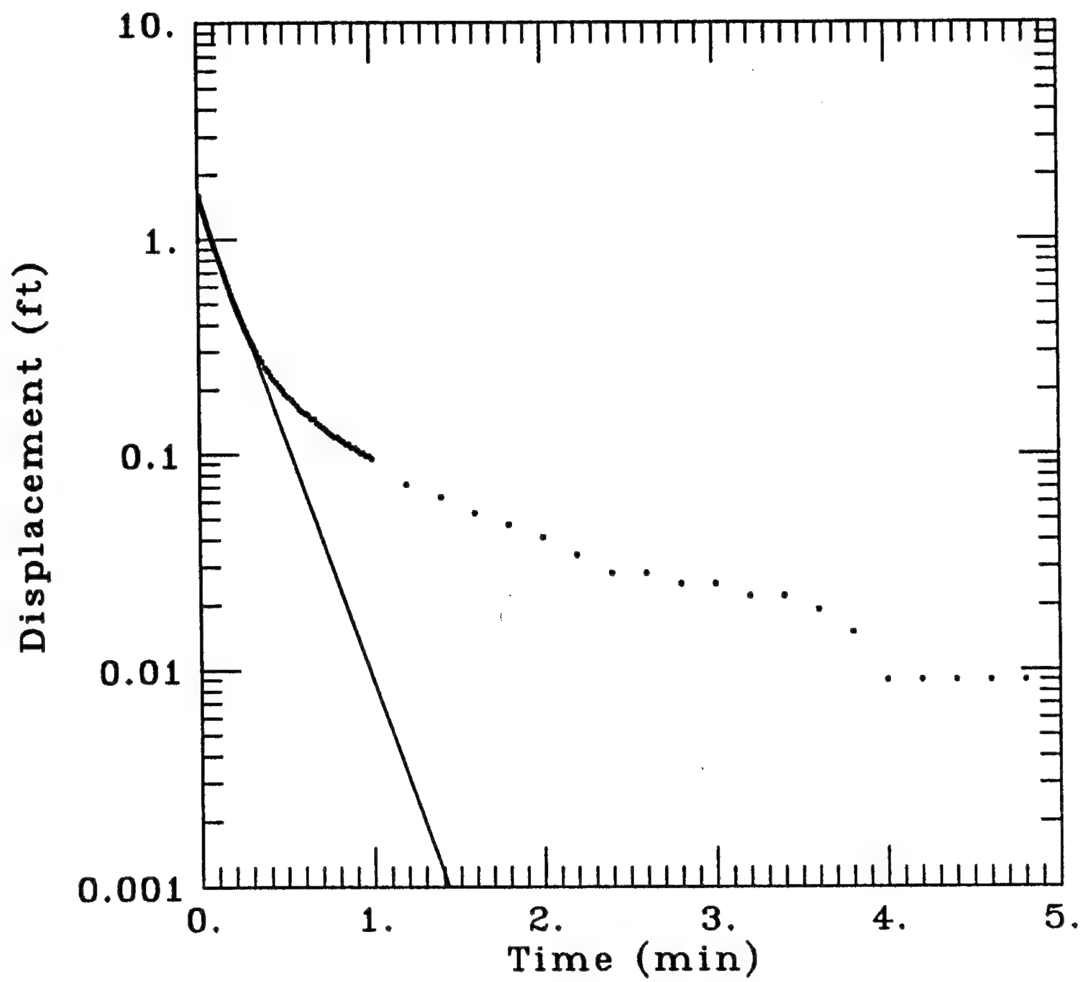
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
9/06/95
TEST WELL:
MW4

ESTIMATED PARAMETERS:
K = 0.001623 ft/min
y0 = 1.708 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.344 ft
L = 8.43 ft
b = 14. ft
H = 8.43 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 6

UANG SITE 6 MW5 SLUG TEST



DATA SET:
uags6mw5.aqt
09/08/95

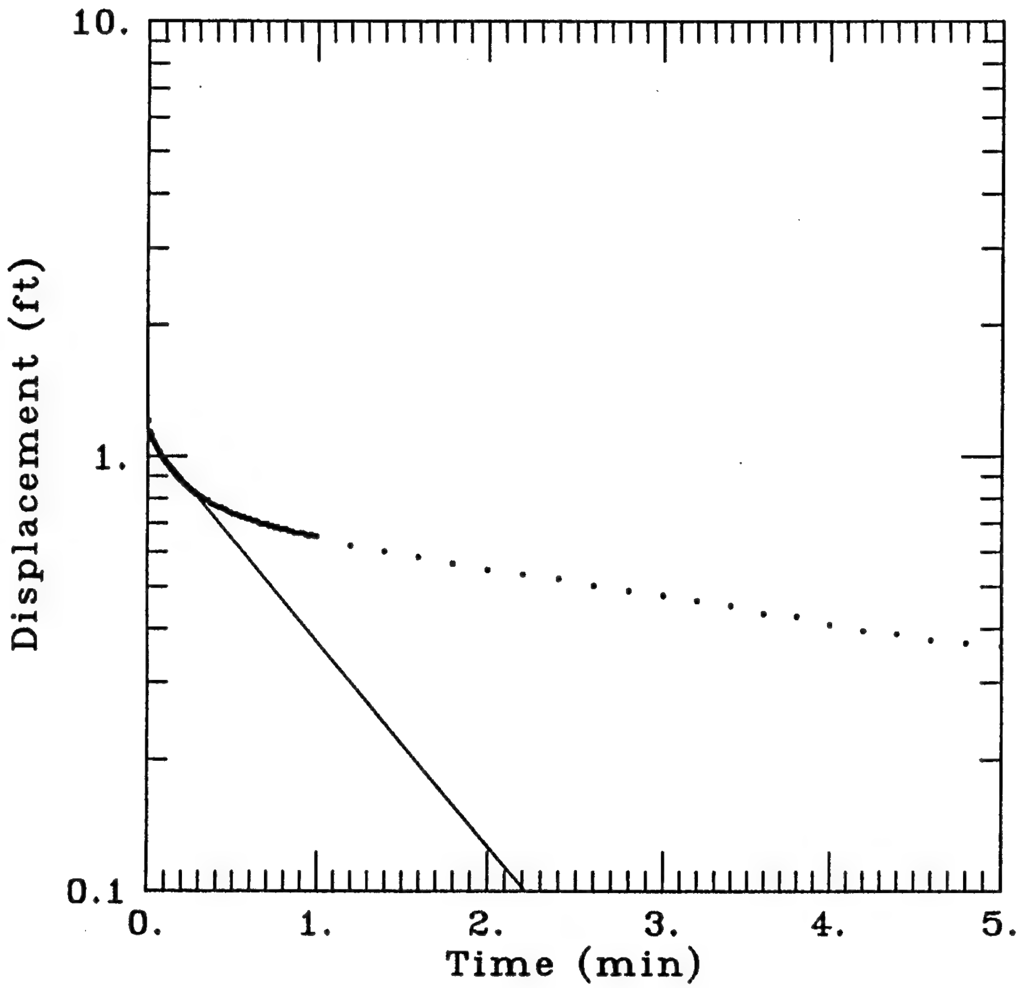
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
9/06/95
TEST WELL:
MW5

ESTIMATED PARAMETERS:
K = 0.004904 ft/min
y0 = 1.537 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.344 ft
L = 6.89 ft
b = 13. ft
H = 6.89 ft

ENGINEERING-SCIENCE,INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 7

UANG SITE 7 MW1 SLUG TEST



DATA SET:
UAGS7MW1.DAT
03/25/93

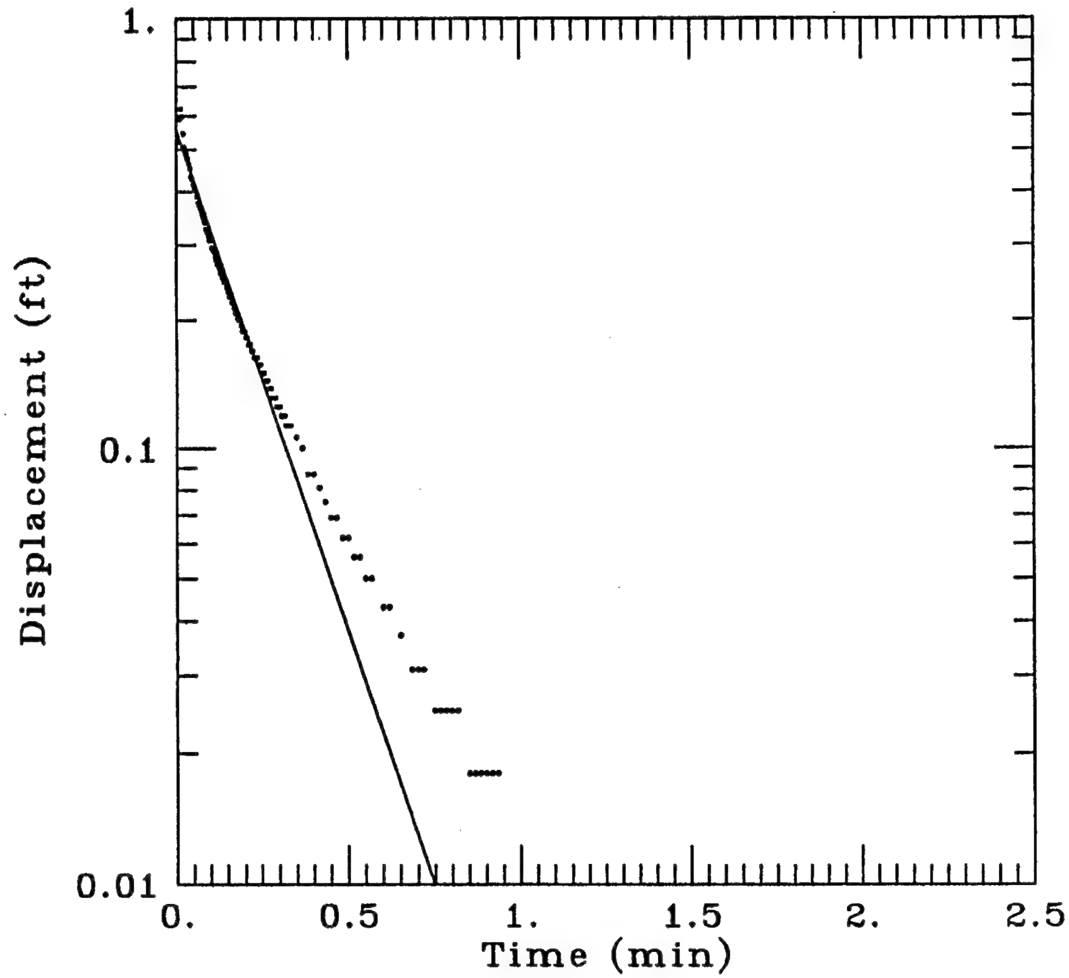
AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/9/93
TEST WELL:
MW1

ESTIMATED PARAMETERS:
K = 0.0007826 ft/min
y0 = 1.103 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 15. ft
H = 10.45 ft

ENGINEERING-SCIENCE, INC.	Client: MARTIN MARIETTA
Project No.: UT014	Location: UANG IRP SITE 7

UANG SITE 7 MW2 SLUG TEST



DATA SET:
UAGS7MW2.DAT
03/25/93

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
3/9/93
TEST WELL:
MW2

ESTIMATED PARAMETERS:
K = 0.003832 ft/min
y0 = 0.5561 ft

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.427 ft
L = 10. ft
b = 15. ft
H = 10.05 ft

APPENDIX J
SOIL GAS CORRELATION

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SOIL GAS CORRELATION

A comparison between the data from the analysis of the soil gas in soil boring samples by the field gas chromatograph (GC) and the actual laboratory analytical data from DataChem and ES Berkeley Laboratories was made to determine if there was a correlation between the GC data and laboratory data. These data were statistically compared to determine a correlation coefficient.

The comparison was made by assembling all of the data into two separate columns. All the data from Sites 1 to 7 were grouped into four tables subdivided by each analyte: benzene, toluene, ethylbenzene, and xylenes. The results of the soil gas analysis were placed in one column and the laboratory analysis for the same interval were placed in the second column. The pairs of data in which both components were zeros were removed from the list. Any datum with either number greater than zero remained on the list.

A variance and standard deviation was calculated on each column of remaining data. The variance is viewed as the average squared deviation of all possible observations from the population mean. The standard deviation provides a statistic that describes dispersion or spread of data around the mean (Davis, 1986). A small standard deviation would indicate little variance around the mean. A large standard deviation would indicate that the observations are widely scattered. Overall, the standard deviations for the soil gas appeared to be relatively small indicating that the majority of the observations are clustered around the mean. However, the soil analytical indicates large deviations from the mean for both ethylbenzene and xylenes.

The covariance was also calculated for both sets of data. The covariance is defined as the joint variation of two variables about their common mean and measures the distribution of values surrounding a common mean. The problem with interpreting variances and covariances is that individual measurements are not very significant because they are dependent on the units of measurement.

The correlation coefficient, denoted as r, is the estimation of a relationship between two variables. This coefficient is independent of measurement. The correlation coefficient is expressed as a ratio and is a unitless number. The covariance can equal but may not exceed the standard deviations of its constituents. Therefore, the correlation coefficient ranges from +1 to -1. A correlation of +1 indicates a perfectly accurate relationship between the constituents; a correlation of -1 indicates that one constituent changes inversely with the other. A correlation of zero indicates that there is no relationship between the constituents whatsoever. Between the endpoints of +1 and -1 exist a number of other possibilities which are less than perfect.

The correlation coefficients for benzene, toluene, ethylbenzene, and xylenes ranged between -0.12381 and +0.233943. These show that the correlation is near zero for all constituents. This indicates that there is little or no relationship between the detected soil gas and the soil boring analytical results for the sites.

TABLE J.1
COMPARISON OF SOIL GAS RESULTS FROM SOIL BORING INTERVALS AND LABORATORY RESULTS FROM CORRESPONDING INTERVALS
151st AREFG, UTAH AIR NATIONAL GUARD
SALT LAKE CITY INTERNATIONAL AIRPORT
SALT LAKE CITY, UTAH

Parameter	Range	Std. Dev.	Variance	Covariance	Corr. Coef.
Benzene					
Soil Gas (ppmv)	0-24.16	8.753509	76.624	-5.87766	-0.12381
Soil Borings (ug/kg)	0-15.0	5.423165	29.411		
Ethylbenzene					
Soil Gas (ppmv)	0-65.2	17.803	316.940	-2204.72	-0.10423
Soil Borings (ug/kg)	0-5200	1188.178	1411766.0		
Toluene					
Soil Gas (ppmv)	0-363.6	92.31373	8521.824	1217.638	0.171706
Soil Borings (ug/kg)	0-450	76.81848	5901.079		
Xylenes					
Soil Gas (ppmv)	0-188.4	59.3356	3520.713	99877.7	0.233943
Soil Borings (ug/kg)	0-30,000	7195.216	51771129.0		

ppmv-Parts per million by volume.